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ENVIRONMENTAL LEGISLATION FOR THE MINING AND METALS INDUSTRIES IN ASIA

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CONTENTS

		Paragraph
SUMMARY		i
I.	INTRODUCTION	1
II.	REVIEW OF MINING AND ENVIRONMENT LEGISLATION	9
1.	India	10
	1.1 Constitutional framework	10
	1.2 Environmental legislation	12
	1.3 Mining legislation	15
	1.4 Institutional framework	19
	1.5 Environmental impact legislation and practice	21
2.	Indonesia	23
	2.1 Constitutional framework	23
	2.2 Environmental legislation	24
	2.3 Mining legislation	28
	2.4 Institutional framework	31
	2.5 Environmental impact legislation and practice	36
3.	Malaysia	39
	3.1 Constitutional framework	39
	3.2 Environmental legislation	40
	3.3 Mining legislation	46
	3.4 Institutional framework	49
	3.5 Environmental impact legislation and practice	55
4.	Papua New Guinea	61
	4.1 Constitutional framework	61
	4.2 Environmental legislation	64
	4.3 Mining legislation	75
	4.4 Institutional framework	79
	5.5 Environmental impact legislation and practice	83
5.	Philippines	93
	5.1 Constitutional framework	93
	5.2 Environmental legislation	96
	5.3 Mining legislation	98
	5.4 Institutional framework	109
	5.5 Environmental impact legislation and practice	113
6.	Thailand	122
	6.1 Constitutional framework	122
	6.2 Environmental legislation	123
	6.3 Mining legislation	125

6.4 Institutional framework 128
6.5 Environmental impact legislation and practice 135

7. Vietnam 139
7.1 Constitutional framework 139
7.2 Environmental legislation 140
7.3 Mining legislation 148
7.4 Institutional framework 160
7.5 Environmental impact legislation and practice 163

III. COMPARATIVE REVIEW 169

1. Constitutional framework 170

2. Environmental legislation 171

3. Mining legislation 177

4. Institutional framework 189

5. Environmental impact assessment 194

Appendices

Indonesia

1. Core of mineral regulatory system
2. Environmental requirement attached to a typical COW
3. Regulations pertinent to the EIA requirement
4. Indonesia's environmental impact analysis based on regulation no. 29/1986

Malaysia

1. Other regulations and orders implementing EQA 1974 affecting the mining and metal industries
2. Other sectoral environment-related laws which have application to the mining and metal industries
3. State mining laws
4. Common aspects of most of the state mining legislation
5. State laws that regulate the purchase and treatment of minerals and mineral ores
6. Outline of environmental impact procedure in Malaysia

Papua New Guinea

1. List of other environmental legislation of potential importance to mining or metal industries
2. Major features of production tenements under the Mining Act 1992 of Papua New Guinea

3. General guidelines for environmental plans

Philippines

1. Other significant laws used to bring environmental objectives to bear on mining
2. Executive Order No. 279
3. Salient features of the proposed mining code
4. Other legislation of importance to mining and metal industries
5. Other environmental impact assessment legislation
6. Philippine EIA system flow chart

Thailand

1. Constitutional provisions
2. Environmental provisions under the Mineral Act
3. Thailand's EIA approval process

References

SUMMARY

i. The purpose of the present study is to help provide an inventory of current environmental legislation framework and practices relating to mining and metal industries in selected countries in Asia, identify the institutions responsible for mining and environmental matters, compare the legislation and procedures of the different countries, and identify the main problems commonly encountered in design and implementation of the legislation. Seven countries - India, Indonesia, Malaysia, Papua New Guinea, Philippines, Thailand and Vietnam - were visited in order to document and establish a general cross section of the environmental legislation affecting mining and the metal industries.

ii. The study contains a description of the mining and environment legislation in the countries studied, starting with the constitutional framework and specific mining environment legislation. Sectoral legislation of importance to the mining and metal industries, institutional developments and the Environmental Impact Assessment legislation and practices are also described. The description serves as a basis for the identification of the problems that have been encountered in the design and implementation of environmental regulation of the mining and metal industries in the countries studied.

iii. Except for Malaysia, all the countries studied have their concern for environmental protection explicitly expressed in the highest level of legislation - the Constitution. This highlights a national priority and serves to influence future legislative policies and executive actions in matters pertaining to the environment in general.

iv. Most of the countries studied have enacted various forms of environmental legislation. The predominant approach is the command and control strategy. This strategy maximizes the ability of the regulator to control where and how resources will be spent to achieve environmental objectives. The approach generally requires the government regulator to prescribe specific health or ecology based ambient environmental objectives, specify standards or limits for the three forms of emission (air, water and solid waste) and impose performance standards. The standards may be specified in terms of the technology and processes to be used in order to prevent environmental degradation, or they may specify the amount of pollutants that can be discharged, the allowable discharge concentration, or the amount of pollutants that must be removed prior to discharge, allowing operators to choose how the standards are to be met. Most of the countries studied have introduced regulations of the latter kind.

v. A disadvantage of the command and control approach is that it disregards the relative efficiency of individual polluters in achieving reduced pollution. Accordingly, economic instruments such as pollution taxes, fees or subsidies are receiving increasing attention, since from the point of view of economic efficiency they are, at least in theory, likely to produce results that more closely approach optimum. General acceptance of the "polluter pays principle", which states that the cost of environmental degradation should be reflected in the costs experienced by the polluter, has also served to focus governments' attention on the costs - both monetary and non-monetary - of pollution. The polluter pays principle is not irreconcilable with a command and control approach.

However, the use of economic instruments is still limited in the countries studied. There are several reasons for the reluctance to use these instruments. Governments are unwilling to be seen to negotiate with polluters over environmental effects and they are not confident about their abilities to estimate the economic value of the environment. From the perspective of the countries studied, a major weakness of economic instruments is that they require a higher degree of sophistication in the institutions responsible for implementation and enforcement.

vi. Most of the mining laws/codes reviewed have in one way or the other been amended or are in the process of being amended to bring existing provisions abreast with the current worldwide trend towards more ambitious environmental management and protection. A distinctive feature of this trend is the incorporation into mining codes of specific procedures for decision making on environmental issues, notably the obligation to prepare environmental impact assessments and to allow affected communities and environmental groups to raise objections prior to approval of the project.

vii. Mining no longer enjoys automatic precedence, if ever it did, over other land-uses and environmental concerns. If at all granted approval, at the very least, mining has to conform to stringent and costly mitigation obligations, often combined with compensatory payments for environmental purposes.

viii. Application of specific obligations emanating from general environmental law, specific laws on air, water pollution and waste disposal, and the mining law itself is frequently done by incorporating the restrictions and other requisite measures identified in the impact statement and through consultation into mining licenses or agreements. Rehabilitation of mined-out areas to a safe and non-polluting state and protection of water (including regular monitoring) is usually required. However, a statutory obligation to post a rehabilitation/restoration bond to ensure implementation exists only in Thailand and the Philippines. Another trend discernible in the countries studied is the requirement for an analysis of the socio-cultural impact of proposed mining projects in order to fully understand how a mine will affect and be received by neighbouring communities.

ix. The need for environmental protection in the countries studied is manifested in the environmental institutions established over the last few years. Many were set up after the environmental awakening of the 1970s and upgraded progressively from agencies charged with pollution control into ministerial status.

x. Institutions administering the mining and metals industry sectors have often been accorded environment protection mandates to address their sectoral concerns. Decentralization of the responsibilities of environmental authorities, particularly as regards policy implementation, from the national to the local level has also occurred in most of the countries studied.

xi. Environmental Impact Assessment (EIA) is a widely accepted tool for ensuring that environmental concerns are fully taken into account in the project planning process. As concerns the use of EIA, two distinct and broad categories can be identified. The first group includes Indonesia, Malaysia, Papua New Guinea and the Philippines which have specific EIA legislation. The countries in the second group, which includes India,

Thailand and Vietnam, have general environmental protection legislation with EIA provisions.

xii. The prevailing sentiment among all the countries studied is that the existence of elaborate environmental protection laws does not suffice if they are not effectively implemented or applied. In fact, inadequate implementation and enforcement appear to be critical shortcomings in most of the countries studied. They result from a variety of reasons, of which the most important are inadequate budgetary allocations and a lack of political will on the part of the policy makers and implementors. The inadequate financial resources result in a lack of personnel with sufficient motivation, administrative leverage, access to information, integrity and capability to identify environmental obligations applicable to mining projects and to impose effective sanctions. Qualified personnel often leave government service for the private sector as a result of the uncompetitive remuneration. Shortages of equipment and laboratory facilities exacerbate the difficulties. Inadequate cooperation between authorities at the national and local levels often leads to shortcomings in policy implementation. Finally, implementation is further complicated by the dominating influence of developmental institutions over other decision making institutions and the priority accorded economic development over environmental protection.

xiii. Governments often find it difficult to formulate standards and guidelines. There is a general lack of detailed information on production processes and on the suitability of various pollution control devices as well as a lack of baseline information concerning the ecosystems to be protected or conserved. There is also a general tendency to copy Western standards which are more often than not inappropriate. This results in an inadequate response to environmental challenges and may produce an expensive environmental burden later on. There is thus a need for criteria and standards that are better suited to the cultural setting of the countries.

xiv. A general shortcoming of the environmental provisions in mining codes, regulations and mineral agreements is that environmental obligations are formulated in general terms, sometimes amounting to a vague statement that firms must respect and to a reasonable extent minimize damage to the environment and undertake rehabilitation activities. In some cases, this general statement has far-reaching implications, as when restoration of mining areas to their original state is set as a requirement. While restoration to pre-mining state might be the most desirable solution in principle, this solution is often not technically or economically feasible.

xv. While it can be argued that broadly worded provisions of law are intended to allow administrators flexibility to formulate more precise requirements as experience accumulates, they could have unintended side effects. From the point of view of large mining investors (the subject of keen competition for investment promotion among the countries studied), generally formulated provisions of law are not very helpful since they need to fully understand their environmental obligations in order to assess investment and operating costs. Countries that have established *unambiguous and concrete* environmental protection legislation or have experience of including equivalent provisions in mineral agreements have better opportunities to attract foreign investment and are probably better equipped to manage and protect the environment.

xvi. On the issue of enforcement of environmental regulations, government power is at its lowest point when it comes to small scale mining. Where no adequate legal provisions have been made for small scale mining, as is the case in many countries, small scale miners operate illegally, and environmental regulations cannot be imposed. Even in the Philippines where small scale mining has been given legal standing, problems such as mercury pollution remain unmitigated. Governments are more likely to get compliance from the large mining operators, particularly those with international mining companies as partners. These companies usually try to maintain a reputation of being good corporate citizens and are willing to invest in safeguards for the environment.

xvii. The continued upgrading of government environmental institutions is necessary if integrated policies are to be formulated and defended against other interests. However, experience in the countries studied shows that environmental problems can not be left to environmental agencies to solve on their own. If implementation, enforcement and monitoring are to improve, environmental authorities need to delegate or coordinate surveillance and enforcement functions with sectoral agencies. Sectoral agencies, including those dealing with the mining and metals industries, usually have infrastructure for monitoring and enforcement in place. This infrastructure can be used also for environmental monitoring and enforcement, often with greater efficiency than if the task were to be carried out by the environmental authorities. The principal environmental agencies can then concentrate on performing their monitoring, policy analysis, advocacy and coordination roles more efficiently.

I INTRODUCTION

1. The current thinking in many developed countries is that the world's future mineral requirements will be sourced from the mineral deposits of Asia and other developing countries.

2. In Asia, the world's most economically dynamic region and home to billions of people, this perception is good news since the mining and metal industry sector is of crucial importance for a number of reasons. The mineral base is still considered an essential component of industrialization programmes. It helps provide financially constrained developing countries with badly needed foreign exchange revenues, it provides the livelihood of a significant proportion of the population, helps opening up remote and/or rural areas leading to the establishment of essential infrastructure, and provides these areas with a more diversified economic base (e.g., employment opportunities not only in mining operations but also ancillary services required by the mines in general).

3. But like any other human activity, the mining and metal industries generate considerable disruption to the physical, biological and socio-cultural environment. It therefore becomes imperative to assess the general environment and development context that may be affected by present, planned and future mining operations.

4. In this regard, legislation and government institutions play vital roles by supplying the basic framework for the implementation of environmental and natural resources policies through environmental planning and management. Their roles are critical to mining and metal industry activities, which have inherent environmental implications.

5. The purpose of the present study is to help provide an inventory of current environmental legislation and practices relating to mining and metal industries in selected countries in Asia, to identify the institutions responsible for mining and environmental matters, compare the legislation and procedures of the different countries, and identify the main problems commonly encountered in the design and implementation of the legislation.

6. Seven countries - India, Indonesia, Malaysia, Papua New Guinea, Philippines, Thailand and Vietnam - were visited in order to document and establish a general cross section of the environmental legislation affecting mining and the metal industries.

7. Prior to the visit, a detailed questionnaire based on the terms of reference, was circulated to government resource persons in the countries. This was done in order to facilitate the collection of information necessary to assess the environment/mining legislation and practices. Unfortunately (and surprisingly!) responses to the questionnaire were not obtained in all cases. Attempts to cover the private sector were hampered by time constraints. The study therefore relies heavily on a review of available relevant literature on mining and environment legislation, particularly publications of the Asian Development Bank (ADB), the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the United Nations Development Programme (UNDP). The individuals interviewed were very helpful and it is hoped that their views

have been accurately presented in this study.

8. In recognition of the limitations of desk studies, a concerted effort was made to verify the accuracy of the information obtained. It is highly probable that some of the information reported in the study is out of date and some may be inaccurate. However, it is hoped that the usefulness of the study lies not only in presenting current environmental protection control legislation, but in identifying which environmental legislation and practices concerning mining and metal industries will be acceptable to the socio-cultural fabric in the region in the light of the growing trend worldwide toward increased environmental protection.

II REVIEW OF MINING AND ENVIRONMENT LEGISLATION

9. This chapter outlines the current environmental legislation and practices in each of the countries studied. It describes existing mining laws and regulations, with particular emphasis on environmental management and protection provisions, as well as other sectoral legislation that may influence environmental management in the mining and metal industries.

1 India

1.1 Constitutional framework

10. Provisions for the improvement of quality of life exist in the Constitution since its proclamation in 1950. A more direct reference to environmental protection and improvement was introduced in the 1977 Constitution (42nd amendment) and reflected in Part IV dealing with Directive Principles of State Policy. These principles are considered fundamental to policy formulation and obligate the state to prepare implementing laws.

11. The relevant Directive Principle in this case is Article 48(A) which states that "The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country". The Constitution also places an obligation on each citizen to protect the environment. This is stated in Article 51 A(g): "It shall be the duty of every citizen of India to protect and improve the natural environment including forest, lakes, rivers and wildlife and to have compassion to living creatures".

1.2 Environmental legislation

12. Present practice to implement the concern for a comprehensive protection of the environment is based on the submission of a management plan for all economic activities. The management plan covers baseline data collection, an environmental impact statement and an environmental management plan.

13. The key environment legislation of importance to the mining and metal industries is the **Environment (Protection) Act No. 29 of 1986 (EPA No. 29).** This law acts as a statutory anchor for environmental protection and stipulates, inter alia, the preparation of an Environmental Impact Assessment (EIA) report and the attendant administrative process (discussed under the EIA section). It establishes a set of minimum national discharge standards which compare favourably with industrial pollution standards in use in developed countries. States are allowed to tighten these standards further. Other major sectoral legislation with environmental protection provisions affecting the mining and metal industries are:

> The **Water Act (Prevention and Control of Pollution) of 1974** (amended 1988) was enacted for the purpose of prevention and control of pollution of water in rivers, streams and wells. Penalties and procedures are established by the Act.

Continuing offence is punishable with daily fines. The Act provides for the establishment of a Central Board and State Boards to promote cleanliness of rivers, streams and wells in different parts of the country.

The **Air (Prevention and Control of Pollution) Act of 1981** establishes a Central Board and State Boards for the prevention and control of air pollution. The function of these Boards is to improve the quality of the air and to prevent, control or abate air pollution in the country. Under the Act, cognizance of an offence is taken by the court only if a complaint is filed either by the Board itself or with the sanction of the Board.

The **Forest Conservation Act of 1980** was enacted to regulate the use of forest. No forest areas can be used for non-forestry purposes without the previous consent of the Government of India. Complementary forest conservation measures are provided under the Mining Act of 1957 (as amended), which adopts the concept of "pollution trading" by requiring compensatory afforestation to be undertaken whenever a forest area is used for non-forest purposes, such as mining.

14. In order to encourage acceptance of environmental obligations and good environmental practices, the government has introduced economic incentives. These include tax exemptions, accelerated depreciation allowances on environmental monitoring equipment, investment allowances and rebates for sewage treatment plants. In the event of environmental damage, heavy fines can be imposed (these are currently under upward review) as well as jail sentences. Initial responsibility is with the manager of the operation concerned but ultimately the directors are held responsible.

1.3 Mining legislation

15. Mining is regulated under the **Mines and Minerals (Regulation and Development) Act of 1957**. Several amendments to the Act form part of the current mining legislation regime. Among them is the **Amendment Act of 1986** which incorporates extensive provisions for protection of the environment, with specific clauses permitting premature termination of a license or lease on environmental grounds. Other amendments are:

The **Mineral Conservation and Development Rules of 1988**, which have been framed for conservation, systematic development of minerals and protection of the environment.

Section 13 of the Revised Mines and Metals of 1957 (Regulation and Development) with amendments in 1987, which empowers the central government to draw up rules and regulations governing the disposal or discharge of any tailings, slime or other waste products including air pollutants arising from any mining or metallurgical operations carried out in a mine.

Rule 27 of the Act on Mineral (Concession) Rules of 1960, which provides for the

incorporation of environmental parameters in the mining and mineral development operations.

16. As a matter of general policy, all mineral investment projects are required by law to be environmentally acceptable. Licenses for prospecting and exploration for minerals are granted by the Departments of Geology and Mining of the state governments. It is not known, however, whether environmental obligations are imposed at this stage (e.g., collection of baseline information). At the conclusion of exploration, applicants for mining leases are required to submit a mining plan (MP). MP's usually contain an environmental management plan covering such aspects as the impact of the proposed operation, remediation and rehabilitation strategies and a description of monitoring mechanisms and procedures. It is not clear whether setting aside rehabilitation funds is required. Before a project can proceed, an environmental clearance must first be obtained from the Ministry of Environment and Forest through its Environmental Assessment Committee on mining projects. Environmental clearance for small scale mining projects is issued by the Indian Bureau of Mines.

17. Mine owners, whether private or government enterprises, are accountable to the Directorate General of Mine Safety for all aspects related to safety and to the Indian Bureau of Mines for mineral conservation and policy matters.

18. Land acquisition is a problem often encountered by mining projects, due to the higher priority accorded to agriculture. In cases where agricultural productivity is affected by mining, compensation for those affected is accorded in the form of money and/or suitable employment, depending on the area occupied as per the Land Acquisition Act 1885. This policy is however not uniformly applied in the states (Dhar 1992).

1.4 Institutional framework

19. The Ministry of Environment and Forest serves as the main agency for planning, promotion and coordination of environmental programmes. Implementation of environmental legislation is vested with the Central and State Pollution Control Boards. All development projects require clearance from these boards.

20. The non-fuel mineral sector is under the Ministry of Mines, except iron ore, which is under the Ministry of Steel. The Department of Mines (DOM) is responsible for geological survey, exploration and administration of the Mines Act. Subordinate offices under the DOM includes the Geological Survey of India, the Controller of Mining Leases and the Indian Bureau of Mines. The latter handles the monitoring of mining operations together with the Directorate General of Mine Safety. Coal, on the other hand, is administered by the Department of Coal within the Ministry of Energy.

1.5 Environmental impact assessment legislation and practice

21. There is no specific statutory requirement for undertaking an Environmental Impact Assessment (EIA); only a general environmental legislation exists - EPA No. 29 -

which empowers government agencies to require an EIA. EIA was first required for mining in 1982. Guidelines in the form of checklists, questionnaires and environmental quality standards have evolved over the years.

22. As regards the EIA process, detailed feasibility reports are first prepared at the state level. On receiving complete environmental information (no public hearing required), a project is discussed in the inter-ministerial environmental appraisal committee for a final decision. When the project is classified as a major category project, field visits are undertaken for an on-the-spot assessment of the project. Monitoring of required environmental safeguards is done by a group constituted for this purpose.

2 Indonesia

2.1 Constitutional Framework

23. **Article 33 of the 1945 Constitution** of the Republic of Indonesia provides the constitutional basis for environmental pollution control and natural resources management policies. It states: "The state shall administer the national resources yielded in the land, water and air and shall utilize them for the people's welfare; and shall administer the means of production which are vital to and influence the life of a majority of the people."

2.2 Environmental legislation

24. The main enabling law for the constitution's environmental requirement is **Act No. 4 of 1982**. This Act serves as a basis for the evaluation and adjustment of all legislation containing provisions related to aspects of the living environment. Defined under the Act are:

* The right of every individual to have a good and healthy environment and the obligation of every individual to maintain and protect the environment;

* The requirement for analyses of any environmental impact for every project that is considered likely to have a significant effect on the environment;

* The "polluter pays" principle;

* The authorization of a system of incentives, disincentives and licensing requirements to promote good environmental management; and

* Compensation for victims of environmental damage and pollution, and restoration of the environment. (Sunardi and Soedjoko 1992)

25. Detailed regulations of Act No. 4 of 1982 are contained in **Government Regulation 29 of 1986.** Regulation 29 prescribes an environmental impact assessment process. This is supported by a ministerial decree containing general guidelines for

implementation as well as procedures for the establishment of environmental impact assessment review commissions in sectoral departments and provincial governments responsible for implementing the regulation.

26. The regulatory mechanism used depends on the activity proposed. A presentation of environmental information (**PIL**) is required for less extensive projects. It is intended to explain the project design and its likely environmental consequences and to present plans to remedy any negative environmental impact. For large or complex projects, an environmental impact analysis (**AMDAL**) is required (Simatupang 1988). Other related regulations of importance to mining and metal industries are:

> **Government Regulation No. 20 of 1990**. Under this law liquid waste can only be discharged into water with the permission of the governor of the affected region. Standards for effluents can be established by the Minister or, in some cases, by the governor concerned.
>
> The **State Minister of Population and Environment No. KEP-03/MENKLH/1991** provides for liquid waste quality standards for activities already in operation.
>
> Laws pertaining to conservation of nature and natural resources are embodied in **Act 5 of 1967** - Basic Law on Forestry, and the Nature Protection Ordinance.

27. There are also a large number of national regulations which address pollution control as well as extensive provincial level regulations on air, water and effluent quality and hazardous waste control measures.

2.3 Mining legislation

28. There are several pieces of legislation that regulate the operations and environmental aspects of the Indonesian mining industry (see **Appendix Indonesia-1**).

29. **Law No. 11 of 1967** (Basic Provision on Mining) encourages the participation of foreign investors in the development of the country's mineral resources by permitting the Ministry of Mines and Energy to enter into "contracts of work" (COW). The COW is a lengthy legal document that substitutes for regulations and requirements in many instances. It is approved by parliament. In general a COW spells out the contractor's right to search and explore for minerals in the contract area, to develop and mine any mineral deposit found in the mining area, to process, refine, store, transport, market sell or dispose of all the product inside and outside of Indonesia. It also spells out the environmental obligations of the contractor. For example, the mandatory feasibility study requires the preparation of an environmental impact study on the effects of the operation of the mine on the environment and an outline of the measures that the company intends to take to mitigate adverse impact (Simatupang 1988, see **Appendix Indonesia-2** for an environmental requirement attached to a typical COW). Plans for rehabilitation are included in a COW and rehabilitation has to be carried out on a continuing basis. The COW does not require the establishment of a rehabilitation fund. Theoretically, funding

of rehabilitation activities could be financed by local governments which receive 80 per cent of royalties and land rent.

30. All other mining authorizations (ordinary mining license) are covered by mandatory environmental measures based on the following provisions of law:

Article 30 of the Mining law of 1967 states that "After completion of mining for minerals in any mine, the holder of the relevant mining authorization is obliged to restore the land in such condition so as not to evoke any danger of disease or any other hazards to the people living in the surrounding of the mine".

Regulation No. 4 of 1974 is on the management of operations and measures to prevent any adverse effects and pollution due to mining operations;

Presidential Decree No. 1 of 1976 regulates mining operations with regard to agriculture, forestry, transmigration and public works;

Article 16 of Act No. 4 of 1982 states that "For any plan which could be expected to create an important impact to the environment, one should carry out an Environmental Impact Analysis, the implementation of which is guided by Government Regulations"; and

Article 6(1) and (2) of Regulation 29 state that the EIA is a part of the feasibility study and that costs of environmental management are part of the normal project costs.

2.4 Institutional framework

31. Environmental matters were previously under the overall management and coordination of the State Ministry of Population and Environment. As of the VIth Development Plan, a Ministry of Environment was established. Significant responsibilities are, however, widely distributed among several departments and agencies of the government, including the Department of Mines and Energy.

32. BAPEDAL is a new environmental impact control agency created primarily to strengthen the enforcement of environmental regulations. It reports directly to the President. The creation of BAPEDAL is an indication of government's efforts to address inadequacies in the sectoral enforcement of environmental regulations. The agency carries out inspections and drafts standards in cooperation with other government agencies. It relies heavily on non-governmental organizations to get reports about breaches of permits.

33. The Department of Mines and Energy (DME) has authority over the mining sector. Under the DME are four subordinate Directorates General for Mines, Geology and Mineral Resources, Oil and Gas, and Electricity and Renewable Resources. The Directorate General for Mines has four subdivisions which handle negotiations with foreign investors, mine supervision, relations with state-owned mining companies,

technology services to the mining industry and coal mining development. The Directorate General of Geology and Mineral Resources performs geological survey functions.

34. The DME has established a Central Commission for Environment which is responsible for the review and approval of environmental impact analyses, management and monitoring plans. It is assisted by a Technical Commission for environment.

35. Matters related to the downstream processing of mineral products fall under the administration of the Department of Industry. Primary smelters are handled by the Directorate General for Metal Based Machinery and Electronics while metal manufacturing and recycling are under the Directorate General of Small Industry.

2.5 Environmental impact assessment legislation and practice

36. Article 16 of the Act No. 4 of 1982 states: "Every plan which is considered likely to have a significant impact on the environment must be accompanied with an analysis of environmental impact, carried out according to government regulations". Regulations pertinent to the EIA requirement are listed in **Appendix Indonesia-3**.

37. The administrative regulations stipulate that the analysis of environmental impact must indicate precisely the negative and positive impacts of a particular activity so that steps may be prepared as early as possible in order to abate its negative impact and develop its positive impact. The major impacts to be considered are:

1. The total number of people affected;
2. The size of the area affected;
3. The length of time during which the impacts will persist;
4. The intensity of the impact;
5. The number of other environment components affected;
6. The cumulative nature of impact; and
7. Whether the impact is reversible or irreversible.

38. A proponent of a mining project, irrespective of the type of mining license, is required to submit several EIA documents, including proposals for rehabilitation and monitoring procedures. Negotiations for Terms of Reference with the proponent are conducted on the basis of the detailed regulations and standards. To ensure unbiased and high quality EIA reports, baseline measurements are carried out by independent consultants paid by the proponent. Local interests are represented by local (provincial and district) governments. Approval of EIAs is discussed in the Central Commission for Environment where the Ministry of Environment is represented. Since the implementation of EIA regulations and until the end of June 1993, 141 EIAs on mining projects had been approved. Proponents are required to monitor their own activities and to report regularly to the appropriate government agency for review. The relevant government authorities carry out inspection in response to reports from local governments, public reactions etc. BAPEDAL can carry out surprise inspections and take samples even in the absence of the operator. The EIA process is summarized in **Appendix Indonesia-4**.

3 Malaysia

3.1 Constitutional framework

39. In the Malaysian Constitution, federal and state powers are explicitly defined in legislative (federal, state and concurrent) lists. Under the constitution, mineral and land rights are state responsibilities. However, environment or pollution is not among the subjects mentioned in the lists. Irrespective of constitutional provisions, legal instruments for the management of the environment and natural resources have been introduced at both federal and state levels.

3.2 Environmental legislation

40. The Federal **Environmental Quality Act (EQA) of 1974** is the main and most comprehensive piece of legislation providing a common legal basis for coordinating all activities relating to protection and conservation of the environment. This Act is applied to all development activities in all states in Malaysia.

41. The EQA 1974 contains specific provisions as regards air pollution, noise pollution, water pollution, land pollution and discharge of wastes. It also empowers the Minister of Science, Technology and Environment, after consultation with the Environmental Quality Council (EQC), to prescribe rules and regulations and to establish standards and criteria to protect the environment from the negative effects of development activities. In the case of effluent standards for mining, however, no standards have yet been promulgated.

42. The **Environmental Quality (Amendment) Act 1985** further strengthens EQA 1974 with the addition of Section 34A. Under this section, any person intending to carry out any "prescribed activity" is required to submit an Environmental Impact Assessment report prior to the approval of such activities by federal, state or local authorities.

43. The **Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987** defines the "prescribed activities" subject to Environmental Impact Assessment (EIA).

44. Other regulations and orders implementing EQA 1974 which affect the mining and metal industries are indicated in **Appendix Malaysia-1**.

45. Sectoral environment concerns are purely state matters. Each state has its own forestry, land, water and mining legislation with pertinent provisions for the protection of the environment (see **Appendix Malaysia-2**).

3.3 Mining legislation

46. Each of the thirteen states and two federal territories of Malaysia has its own

mining law governing the exploration and mining operations of minerals (see **Appendix Malaysia-3**). Mining Enactment, FMS Cap.147 is common to the main mining states and has also been adopted in other states. Procedures in acquiring exploration and mining rights as well as the terms and conditions of prospecting licenses and mining leases vary from state to state. Common aspects of most of the state mining laws are presented in **Appendix Malaysia-4.**

47. The majority of the state mining laws and their amendments are based on old mining concepts and contain inadequate provisions for the protection of the environment. As a remedial measure, the state authority normally incorporates terms and conditions in the mining lease, although not mandated by the mining law. Any or all of the following have been imposed as additional terms and conditions of the mining lease:

1. Mining scheme shall be approved by the Department of Mines Inspector;
2. Mining shall not be allowed within a certain distance from railroads, infrastructure, rivers, etc.;
3. Rehabilitation of mined-out areas;
4. Waste water shall be circulated back to the mine;
5. Discharge of waste water and effluent into the river system is prohibited unless a license has been issued by the Department of Mines Inspector;
6. Undertake steps to prevent soil erosion and water pollution;
7. The land shall be filled and levelled upon completion of mining; and
8. The land shall be stabilized upon completion of mining.

48. Each state also has its own law relating to the purchase and smelting of mineral ores (see **Appendix Malaysia-5**).

3.4 Institutional framework

49. The Department of Environment (DOE) within the Ministry of Science, Technology and Environment is responsible for enforcement and monitoring of environmental laws. It is headed by the Director General of Environment whose main function is to administer and enforce EQA 1974 and any regulations and orders made thereunder.

50. The DOE shares the task of environmental management and enforcement with state and local authorities. Enforcement and monitoring of water, dust, noise and effluent emissions and discharges have been undertaken by DOE with regard to various activities. However, the participation of DOE in the case of mining and metallurgical operations is limited to the assessment and review of EIA reports.

51. The federal Ministry of Primary Industries is responsible for the development of the mineral sector. It has two technical departments: the Department of Mines and the Geological Survey.

52. Enforcement of laws and monitoring of exploration and development of metallic minerals are within the jurisdiction of the Department of Mines (DM) while the

corresponding tasks with regard to the exploitation of non-metallic mineral deposits are under state control. The State of Perak is the only state that has delegated the monitoring aspects of rock materials to the Department of Mines. Monitoring of water and effluent discharges and other conditions established in individual mining leases, as well as other functions pursuant to the provisions of Mining Enactment, including the imposition of fines, imprisonment and/or stoppage of mining operations for violation of the terms and conditions of the mining lease, are the responsibility of the Department of Mines.

53. The Geological Survey is responsible for carrying out geoscientific investigations and is recognized as the authority on mineral analysis in the country.

54. Each state maintains a Department of Lands and Mines (DLM) which, in collaboration with a number of District Land Offices, processes applications for prospecting licenses and mining leases. In Sarawak and Sabah the equivalent of the DLM is the State Department of Lands and Survey.

3.5 Environmental impact assessment legislation and practice

55. The EIA requirement was made mandatory in 1988 by Section 34A of Environmental Quality (Amendment) Act 1985 while the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987 provides the details of prescribed activities subject to the EIA process.

56. Prescribed activities which require submission of EIA reports include:

1. Mining
   a) Mining of minerals in new areas where the mining lease covers a total area exceeding 250 hectares;
   b) Ore processing, including concentrating for aluminium, copper, gold and tantalum; and
   c) Sand dredging involving an area of 50 hectares or more.

2. Industry
   a) Non-Ferrous: primary smelting of aluminium, copper and others;
   b) Non-Metallic: cement with a clinker output of 30 tons/hour and above; lime with an output of 100 tons/day and above for a burnt lime rotary kiln or 50 tons/day and above for a vertical kiln.
   c) Iron and Steel: iron ore requirements more than 100 tonnes/day; or scrap requirements more than 200 tonnes/day.

3. Quarries
   Quarrying of aggregate, limestone, silica, quartzite, sandstone, marble and decorative building stone within three kilometers of any existing residential, commercial or industrial area for which a license, permit or approval has been granted for residential, commercial or industrial development.

57. In terms of general procedure (see **Appendix Malaysia-6**), the EIA process starts with a preliminary assessment of the impacts of the project. This assessment is usually carried out during the pre-feasibility stage of project development. The EIA report is prepared by the project proponent through a consultant accredited/registered by the Department of Environment (DOE). A technical committee within the DOE reviews the report, using external assistance in cases where the DOE lacks the expertise (DOE, 1993). The Technical Committee may send a questionnaire or EIA report to other government or non-government agencies for comments or recommendations.

58. Detailed assessment is undertaken for those projects where significant impacts have been predicted in the preliminary assessment reports. This assessment is done during the feasibility study of the project. The detailed EIA report is submitted to the Director General of Environmental Quality for approval prior to the granting of relevant federal or state government authorization to implement the project. Detailed assessment is carried out on the basis of specific terms of reference issued by an ad hoc Review Panel appointed and chaired by the Director General (DOE, 1993). Additional information from the project proponent may be required until the panel is satisfied and is in a position to recommend approval or rejection of the EIA report to the approving authority. The approving authorities include:

1. National Development Planning Committee for Federal government projects;
2. Regional Development Authorities;
3. State Planning Authorities for State Government sponsored Projects, and;
4. Ministry of Trade and Industry or MIDA for industrial projects.

59. EIA reports include a full description of the project and of solid wastes and impacts on land, liquid effluent and impacts on surface water, impacts on the atmosphere, social impacts, biological impacts, ecological impacts, mitigating measures, monitoring and review.

60. Although a booklet on the preparation of EIA is available, it is best suited for manufacturing projects and does not provide guidance on specific consequences of mining. As regards public participation, it has been claimed that it is part of the EIA process; available literature shows otherwise. However, there is a growing support for increased environmental protection and this has been used to bring pressure to bear on state officers who approve mining leases.

4 Papua New Guinea

4.1 Constitutional provisions

61. Papua New Guinea is committed to the conservation and use of natural resources and environment for the collective benefit of all and for the replenishment of those resources for the use of future generations. This is reflected in the Fourth National Goal and Directive Principle of the Papua New Guinea Constitution.

62. The conservation and protection of the environment is particularly important in

the Papua New Guinea context where more than 80 per cent of the rural population rely on subsistence use of resources (Cabalda and Murphy 1992). For this reason, the acceptability or otherwise of a mining development project is judged by the project's impact on the local people and the land, water and other resources that they use.

63. Mining and environmental issues are constitutionally and in past practice largely the concern of the national government. Provincial governments have increasingly been demanding more control over local issues, particularly resource development. Although little has changed as regards the legislation, the involvement of provincial governments in mining projects has become more important as a result of political agreements with the national government. This trend seems likely to continue.

4.2 Environmental legislation

64. To implement the constitutional commitments, a number of laws have been enacted, including the Environmental Planning Act 1978, the Environmental Contaminants Act 1978, the Conservation Areas Act 1978 and the Water Resources Act 1982. These statutes constitute the interlocking legislative framework by which the state of Papua New Guinea can enforce its environmental policy in the context of all developmental projects, including in the mining and metals industries.

65. All development projects are subject to the **Environmental Planning Act 1978**, Chapter 370, which is considered the principal environmental legislation in Papua New Guinea. This Act provides the mechanism for environmental planning processes when any proposal is likely to have significant environmental (including social) impacts. Other environmental legislation relating to permitting and licensing and the role of government departments is based on the Environmental Planning Act.

66. The Act and the guidelines for its implementation are based on environmental assessment procedures established in the United States under its National Environmental Policy Act of 1969, in Australia under the Environmental Protection (Impact of Proposal) Act of 1974 and in other countries where legislation require environmental impact statement studies for new projects.

67. Certain mining projects have been exempted from the Act and are instead covered by specific Acts. These are the Mining (Bougainville Copper Agreement) Act 1967 and the Mining (Ok Tedi Agreement) Act 1976.

68. The **Environmental Contaminants Act (ECA) 1978**, partly based on the Victorian Environmental Protection Act of 1970, contains the framework for ensuring environmental quality through standards and licenses for the discharge of contaminants to the environment - air, water, and land. Such a broad framework ultimately results in overlap with other environmental legislation. In the case of water resources for example, an overlap exists between the Environmental Contaminants Act and the Water Resources Act. For mining projects, it is the latter Act that has been used to regulate water pollution aspects.

69. Of particular interest to the mining/metal industry sector is the adoption of air quality guidelines and a regulation on hazardous substances which is being drafted.This regulation contains provisions for a Register of Hazardous Environmental Contaminants which will control the importation, sale, manufacture or distribution of contaminants in Papua New Guinea and a licensing system. The provisions have, however, proved difficult to realize at this stage of the country's development. In many ways, the ECA exemplifies problems in developing countries regarding the implementation of a sophisticated legislation with only limited resources. So far, only regulations governing pesticides and a pesticide register have been developed.

70. On the positive side, the ECA does have a value in that it provides a basis for future action which may become increasingly necessary if pollution problems increase. Standards for ambient air quality, air emission, noise and waste water effluent have been specified, as have conditions of approval under the Act for various industrial facilities.

71. The **Conservation Areas Act of 1978** provides for the effective protection, via a process of rational planning, of government and private owned land. This Act is however not operational due to resource constraints.

72. The **Water Resources Act 1982** was enacted primarily to provide for the protection and management of water resources. Under the Act an application for a Water Use Permit is necessary. Once granted, this permit details the prerequisites of consent and prescribe conditions and standards to be met that will ensure adequate environmental protection. Domestic water usage (customary, public and private) rights are safeguarded, but the unauthorized taking and pollution of water is an offence.

73. For mining development projects, the granting of a Water Use Permit is tied to a licensing process of water investigation studies which is used by government to facilitate reporting of investigation results. Permits may be revoked for failure to comply with conditions, and can also be revised based on an assessment of environmental reports submitted to the Bureau of Water Resources.

74. Other environmental legislation of significance to the mining and metal industries is described in **Appendix Papua New Guinea-1**.

4.3 Mining legislation

75. The **Mining Act 1992** is the principal piece of legislation intended to ensure that the mineral resources of Papua New Guinea are explored and mined to the maximum practicable extent, consistent with environmental legislation, for the benefit of the citizens of the state as a whole. This Act embodies modern technical concepts, compatible with modern administrative methods and, most importantly, adapted to the cultural setting of the country.

76. The Act reaffirms the State's ownership of all minerals. The State is the sole authority responsible for the issuance of leases and licenses and for the proper regulation of exploration and mining activities. All land is available for exploration and mining. A

tenement over land that has been reserved under the **Land Act 1962 (Chapter 185)** cannot be granted without the agreement of the minister responsible for that land. The Minister of Department of Minerals and Energy (DME) may however reserve land in the national interest under the provisions of the 1992 Act.

77. Other features of the Act includes the mandatory requirement for the Minister (DME)to convene a "development forum" to consult with provincial governments prior to the granting of leases. Similarly, the Minister is required to consider submissions by provincial governments in connection with the grant of other tenements. The Act also establishes the rights of landowners over alluvial minerals on their lands and allows them to freely mine these minerals provided machinery is not used, subject to the provisions of the **Mining (Safety) Act (Chapter 195A)** and environmental legislation.

78. A proponent of a mining project may be granted an Exploration License (EL) for a two year period, renewable for further periods of two years, provided that expenditure and work commitments are suitable and are met, and that all relevant Acts are complied with. Three possible titles are available for mining - Special Mining Lease, Mining Lease and Alluvial Mining Lease - the latter developed specifically to facilitate small scale mining by landowners. Award of such tenements however, are subject to "adequate protection for the environment, in which case the applicant is required to present evidence of compliance with the requirements of the Department responsible for environmental matters". The main characteristics of the 1992 Act are summarized in **Appendix Papua New Guinea-2.**

4.4 Institutional framework

79. The Department of Environment and Conservation (DEC) is the primary agency tasked with the implementation of acts relating to the environment, flora and fauna. However, protection of the environment is not the exclusive responsibility of DEC, since it requires the cooperation and support of other departments to fulfil its mandate. In the case of mining projects, the DEC is responsible for the environmental assessment and monitoring of several major mining proposals. The National Executive Council has also approved decision 183/91 meeting 60/91 which ruled for the transfer of environmental functions of the Department of Mineral and Energy (DME) to DEC by 1992.

80. The principal powers under the 1992 Mining Act are still vested in the Head of State and the Minister of the Department of Minerals and Energy (DME). Administrative responsibility for mineral resources development rests with the DME through a Director. A Mining Advisory Board acts as the principal advisory body for the minister.

81. Provincial governments also play a critical role in the administrative and political system in Papua New Guinea. Many departments have decentralized various aspects of their operations to provincial departments. Some provinces have started to develop their own roles in environmental planning and management. Their participation in the planning and negotiations associated with larger mining development projects has been crucial. The recent requirement for the "development forum" which requires participation

of project proponents, traditional resource owners, provincial and national government personnel, has been an interesting mechanism in promoting resolution of contentious issues in project planning, particularly as regards mining and environmental protection.

82. Other government authorities involved in environmental management include the Bureau of Water Resources, the Department of Health (for assessment and monitoring of environmental contamination and enforcement of Environmental Contaminants Act) and the Department of Forest.

4.5 Environmental impact assessment legislation and practice

83. The Environmental Planning Act 1978 requires that an Environmental Plan (EP) - a document containing initial plans that the developer intends to adopt to protect the environment from identified impacts - be submitted for any proposed development which, in the opinion of the Minister for Environment and Conservation, may have significant environmental implications. This allows the Department of Environment and Conservation (DEC) time to consider the environmental consequences and the control measures deemed necessary prior to granting approval for development to proceed. A revised specific set of guidelines was instituted by the national government in 1985 for the preparation, content and format of an Environmental Plan (see **Appendix Papua New Guinea-3**).

84. **Appendix Papua New Guinea-4** contains a schematic diagram of the environmental planning process. The present planning process provides for consultation among the project proponent, the DEC, relevant provincial governments and local communities on the basis of an Environmental Inception Report (EIR). While not mandatory, the practice of undertaking an EIR has been used by major mine developers. The EIR, based on preliminary feasibility and design concepts, identifies sensitive areas and proposes programmes for environmental study. The EIR is developed late in the exploration phase after a pre-feasibility appraisal has confirmed the economic potential of the project. A proponent may submit a series of inception reports and receive feedback with respect to sensitive areas identified and the scope of study proposals. At this stage, relevant provincial governments are consulted.

85. There are three EP procedures that may be followed in any proposed development: voluntary initiation of an EP by the proponent, requisition of an EP by government, and application for exemption for the submission of an EP (Cabalda and Murphy 1992).

86. Under the Voluntary EP, the project proponent is expected to initiate an early contact with the DEC leading to the EP submission. This practice is encouraged by the DEC and appears to be beneficial to the proponent as it allows early discussions of environmentally sensitive and non-sensitive issues, resulting in the EP scope being narrowed down to the perceived most significant issues and impacts. Under this procedure, the approval of the EP is within the jurisdiction of the Minister of DEC as opposed to collective decision making by the National Executive Council. Most recent large mining developments have followed the Voluntary EP procedure.

87. If a Voluntary EP procedure has not been followed and the DEC believes that the development will have significant impacts, a Requisition EP is enforced. This procedure has not been applied to any mining companies in Papua New Guinea, but several proponents of timber projects have been forced to submit a Requisition EP (Cabalda and Murphy 1992).

88. A Requisition EP has the effect of halting any on site development work and any other state approvals. Approval of a Requisition EP is the responsibility of the National Executive Council and this can be a more time consuming process than approval through the DEC.

89. An application for an Environmental Exemption is only deemed appropriate if the proponent believes the development is unlikely to have any significant environmental effects. This procedure has not been followed in the case of any mining project (Cabalda and Murphy 1992).

90. Other attendant provisions to an EP approval are the submission of an Environmental Management and Monitoring Program under a self regulating arrangement, and a site restoration programme, which usually states that progressive rehabilitation shall be carried out. Furthermore, proponents are required to provide an Executive Summary of the proposal, including the major benefits and disadvantages published in English and the most suitable of either of the two main languages of PNG. This is intended to allow for wider discussion and understanding of the project's perceived environmental consequences.

91. It should also be noted that formulation of guidelines for the integration of Social Impact Assessment and Social Monitoring, is being undertaken as part of the larger process of environmental planning and monitoring. This is an offshoot of the Bougainville crisis which many believe could have been anticipated if adequate Social Impact Assessment and Social Monitoring had been carried out.

92. Worth mentioning here is the unanimous assessment that the Environmental Plans prepared for mining projects in PNG have been without exception comprehensive in scope and of high professional standard when compared with those produced in the forestry and agricultural sectors (Cabalda and Murphy 1992).

5 Philippines

5.1 Constitutional Framework

93. In the Philippines, the concern for environment and mineral resources exploration, development and utilization is explicitly expressed in the State's Constitution ratified by the Filipino people in 1987.

94. The 1987 Philippine Constitution enshrines natural resources and environment in at least 18 sections within four articles. Section 16 of Article II states: "The State shall protect and advance the right of the people to a balanced and healthful ecology in accord

with the rhythm and harmony of nature". Section 2 of Article XII describes the State's main policy framework on the exploration, development and utilization of mineral resources. This section states that:

- Filipino citizens and corporations and associations with at least 60 per cent of the capital owned by Filipino citizens are qualified to engage in the exploration, development and utilization of mineral resources;

- All minerals, wherever found, are owned by the State;

- The exploration, development, and utilization of mineral resources shall be under the full control and supervision of the State;

- The State may directly undertake the exploration, development and utilization of mineral resources, or it may enter into co-production, joint venture or production-sharing agreements with Filipino citizens, corporations or associations for a maximum period of 25 years renewable for not more than 25 years under terms and conditions provided by law;

- The President may enter into agreements with foreign-owned corporations involving technical or financial assistance for large-scale mining projects; and

- Congress may allow small-scale utilization of mineral resources by Filipino citizens.

95. These constitutional provisions provide the basis for mining environment policy and legislation.

5.2 Environmental legislation

96. General environmental legislation came into force in the Philippine after the 1972 United Nations Conference on the Human Environment in Stockholm. The two main pieces of environmental legislation of general application to mining are:

Presidential Decree (PD) 1151 (6 June 1977) otherwise known as the **Philippine Environment Policy** which transformed the "western-bred environmentalism" into official government policy, codified in law and later enshrined in government institutions. PD 1151 sets broad environmental objectives, including the creation of conditions under which man and nature can thrive in harmony, fulfillment of the economic and other requirements of generations of Filipinos, and ensuring the attainment of environmental quality that is conducive to a life of dignity and well-being. **Section 4 of PD 1151** in particular recognizes the right of the people to a healthy environment and renders compulsory the submission of **Environmental Impact Assessment** studies by all agencies and authorities of the national government, including corporations owned or controlled by the government, as well as private corporations, firms and entities.

Presidential Decree No. 1152, known as the **Philippine Environment Code**, which entered into force on the same date 6 June 1977, includes a comprehensive code that touches on most of the elements of the environment that need protection, namely (i) air quality management, (ii) water quality management, (iii) land use management, and (iv) natural resources management and conservation (including mineral resources). Each of these issues is addressed by way of standards, monitoring, regulations and enforcement (Dhar, 1991).

97. Other significant laws used to bring environmental objectives to bear on mining, including laws protecting the major environmental media (air, water, land) by prescribing limits or standards, are summarized in **Appendix Philippines-1**.

5.3 Mining legislation

98. At the time of writing, the Philippine mineral sector regulatory system is in a state of transition. Mining activities are governed on an interim basis by **Presidential Decree No. 463 (PD 463)** (17 May 1974), otherwise known as the "Mineral Resources Development Decree of 1974", pending the enactment by the Philippine Congress of a more comprehensive mining code. While much of the substance of the decree has been rendered ineffective by executive and administrative order, it is recognized that PD 463 and its subsidiary regulations contain environmental policies significantly different from today's environmental context.

99. The key pieces of mining legislation that regulate the mineral industry's exploration, development and utilization, and environmental management activities are described below.

100. **Executive Order (EO) No. 211 (10 July 1987)** reconciles PD 463, as amended, with Article XII of the 1987 Constitution. It prescribes interim procedures for the processing and approval of applications for exploration, development and utilization of minerals, and, more importantly, gives continuing validity to PD 463, thus giving recognition to the validity of existing perfected mining claims and leases.

101. **Executive Order No. 279 (23 July 1987)** empowers the Secretary of Environment and Natural Resources to negotiate and conclude joint venture, co-production, or production-sharing agreements for the exploration, development and utilization of mineral resources, and sets out the guidelines for such agreements and those agreements involving technical or financial assistance[1] by foreign-owned corporations for large-scale exploration, development, and utilization of minerals as provided for under the 1987 Constitution. The order likewise stipulates that all provisions of PD 463 not inconsistent with the order shall continue in force and effect (see **Appendix Philippines-2** for the minimum terms and conditions required under this Order).

102. **Mines Administrative Order No. 20, series of 1977 (26 July 1977)**[2] is an amendment to Consolidated Mines Administrative Order of 1975 which lays down the detailed environmental policy for mining areas relative to:

- environmental protection in mining areas
- surface mining
- underground mining
- mill waste tailings disposal and water conservation
- socio-economic development
- restoration and rehabilitation of mined-out areas
- establishment of an Environmental Protection and Enhancement unit in every mine
- performance guarantee/surety bond in the amount of pesos 1,000 (US$ 36.00) per hectare of active mining area.

103. **Presidential Decree No. 1198 (19 September 1977)** mandates "all individuals, partnerships or corporations engaged in exploration, exploitation of natural resources or in the construction of infrastructure projects to restore or rehabilitate areas subject thereof or affected thereof to their original condition".

104. **Presidential Decree No. 1251 (28 November 1977)** imposes a fee on operating mining companies to be known as "**Mine Waste and Tailings Fee**" to compensate for damages to private landowners the proximate cause of which is mine waste and mill tailings, and for other purposes.

105. **DENR Administrative Order No. 82, series of 1990, and DENR Administrative Order No. 82-1, series of 1990** set the implementing and procedural application guidelines for a mineral production-sharing agreement which includes a requirement for an applicant to commit to undertake an Environmental Impact Assessment. Additional stipulations are (i) Declaration of location under PD 463 shall no longer be accepted; (ii) Minimum financial requirement for individual and corporate applicants; (iii) Application requirement for a two-year work program; (iv) Survey of the area; (v) Publication of application details; and (vi) DENR verification of the claim area.

106. **Omnibus Investment Code of 1987**[3] implemented by the Philippine Board of Investments (BOI), provides fiscal incentives for registered mining projects including (i) income tax holiday for four years for non-pioneering and six years for pioneer projects extendable under certain conditions to eight years; (ii) tax and duty-free importation of capital equipment until August 12, 1992 (under EO 443, issued on January 3, 1991, a 9% duty on all imported articles was imposed until June 30, 1992; (iii) additional deductions for labor expenses from taxable income for up to 5 years; (iv) tax credits on domestic capital equipment; (v) liberalized employment of foreign nationals for supervisory, technical or advisory positions; (vi) exemption from wharfage duties; (vii) exemption from value-added tax for export-oriented projects; and (viii) tax deductions for labor training expenses;

107. **Republic Act No. 7076 (RA 7076)**, otherwise known as the People's Small-Scale Mining Act of 1991, declares that the State shall promote, develop, protect and rationalize viable small-scale mining activities in order to generate more employment opportunities and provide an equitable sharing of the nation's wealth and natural resources, giving due regard to existing rights.

108. The **Proposed Mining Code** is the enabling Act that will implement Section 2, Article XII of the 1987 Constitution. It also contains provisions directed at the preservation/protection of the environment. Salient features of the code are summarized in **Appendix Philippines-3**.

5.4 Institutional framework

109. In the past, environmental concerns in the Philippines were delegated to a multitude of government agencies, both at the local and national levels. This resulted in a fragmented bureaucracy with conflicting mandates, interest and overlapping functions.

110. With the issuance of Executive Order No. 192 in 1987, a new organizational structure, the **Department of Environment and Natural Resources (DENR)** was created. DENR is the primary government agency responsible for the conservation, management, development and proper use of the country's environment and natural resources, as well as for the licensing and regulation of all mining projects.

111. Staff bureaus created under EO 192 and relevant to this study include: (i) the **Environmental Management Bureau** (EMB), which formulates and implements policies and programmes for environmental management and pollution control approved by the DENR, including the implementation of the Environmental Impact Assessment System (EIA) and the granting of Environmental Clearance Certificates (see section 5.5); (ii) The **Mines and Geosciences Bureau** (MGB) which formulates policies, regulations and programmes on mineral resources development and processes and recommends action on applications for mining rights; and (iii) fourteen **DENR Regional/Field Offices** which enforce the laws on mining, environment and pollution control in their jurisdictions and implement the policies, plans, programmes, projects, rules and regulations issued by the DENR Secretary.

112. Another feature of EO 192 is the creation of the **Pollution Adjudication Board** (PAB) which is empowered to adjudicate pollution cases under Republic Act 3931 and PD 984. It includes the DENR Secretary as Chairman and has as its members two undersecretaries designated by the Secretary, the EMB Director and three other members designated by the Secretary representing the private sector. Recently, the DENR Secretary also designated the Director of MGB to the Board.

5.5 Environmental impact assessment legislation and practice

113. Specific procedures on mining environment issues, notably the obligation to prepare Environmental Impact Assessment studies and to present these in public hearings have been in force in the Philippines since 1977.

114. The legal framework for the EIA originated with PD 1151, influenced and inspired by "American Environmentalism" and subsequently adopted and implemented by **Presidential Decree No. 1586 (11 June 1978)**. Subsidiary laws and rules and regulations

followed, the most important of which are: (i) **Proclamation No. 2146** which further defined the EIA coverage to "environmentally critical projects" (ECP) and "projects located on environmentally critical areas" (ECA) through an enumeration of certain projects and ares for which an EIA should be submitted; (ii) **Letter of Instruction No. 1179** which authorized the DENR/EMB to issue "Environmental Compliance Certificates" (ECC) certifying that the proposed project will not bring about an unacceptable environmental impact to those who comply with and meet the EIS requirements; and (iii) **DENR Administrative Order No. 21** which amended the revised rules and regulations of implementing the EIA System (see **Appendix Philippines-5** for other EIA related laws).

115. Evaluation of the Environmental Impact Statement (EIS) under Article II of DENR Administrative Order No. 21 stipulates that projects falling under ECP shall submit their EIS to EMB while those projects that fall within the ECA, where projects are required to submit **Project Description** (PD), shall submit the PDs to the DENR Regional Offices concerned. However, they may be required to submit an EIS if deemed necessary.

116. Exemptible projects or those not covered by the EIS System include the ones listed below. Such exemptions, however, do not preclude the DENR from requiring the proponent from instituting the necessary/appropriate remedial measures to protect the environment.

- Environmentally critical projects (including mining projects) which were operational prior to 1982, except in cases where the operation is expanded in terms of daily production capacity or surface coverage;

- Projects which discharge minimal amount of wastes and where management of the wastes is relatively easy;

- Projects with a capitalization of not more than pesos 500,000;

- Projects employing not more than 20 persons; and

- Projects of national interest or tied to international commitments.

117. The review and evaluation mechanism presently implemented by EMB/DENR under the EIS rules and regulations is summarized in **Appendix Philippines-6**.

118. The review and evaluation of a Project Description follows basically the same procedure as that of the EIS except in the conduct of public hearing which is not necessary. Upon completion, the Regional Technical Director for Environment can recommend the granting or denial of the ECC by the Regional Executive Director. An EIS may be required at this stage.

119. Rehabilitation and restoration of mining areas to a state of safety and environmentally acceptable conditions, including regular monitoring, is a basic requirement safeguarded by an obligation to post performance bonds, surety bonds and

lately Environmental Guarantee Funds (EGF). The EGF is a recent ECC conditionality introduced as a direct consequence of an organized opposition to mining projects and is expected to become a common condition in the ECCs issued to all projects and activities, including mining operations.

120. Restrictions and other requisite measures identified in the EIA and consultation process form part of the binding conditionalities attached to ECC. Environmental monitoring is undertaken by the developer while the DENR Regional Offices and EMB carry out compliance monitoring activities of the ECC conditionalities on an ad hoc basis and assess company prepared environmental monitoring reports.

121. Memoranda of Agreements resulting from the organized opposition against mining companies (e.g., Benguet Corporation-Benguet Antamok Gold Operation) set up a mechanism for a tripartite monitoring (composed of government, people and proponent) of performance, a trend that is likely to be institutionalized and continue in the future.

6 Thailand

6.1 Constitutional framework

122. With regard to national commitment to protect the environment, Thailand's Constitution of 1978 is less detailed than its predecessor, the Constitution of 1974 (See **Appendix Thailand-1**). It contains only two environmental clauses under the chapter "Directive Principles of State Policies":

> **Section 65**. "The State shall preserve, maintain an environmental balance and shall eliminate pollutions which endanger health and hygiene of the population".
>
> **Section 69**. "The State shall promote the exploration of natural resources in order that they may be economically exploited for the Thai people; provided that it is not contrary to he principles of conservation".

6.2 Environmental legislation

123. In 1992, a new Royal Decree entitled the "**Improvement and Conservation of Natural Environmental Quality Act of 1992** (ICNEQA) dramatically changed the environmental protection regime in Thailand. Under the 1992 Act, the government agency responsible for its implementation has been authorized to set standards on the quality of the elements of environment.

124. The 1992 Act is just one aspect of the Thai government's efforts to preserve the quality of the environment. Other relevant laws are scattered throughout various Royal Decrees and ministerial regulations. The following are the issued guidelines and policies relating to the preservation of the environment:

Environmental Quality Act, B.E. 2518 states that any person who intends to conduct prescribed projects or activities must produce an Environmental Impact Assessment (EIA) report. Prescribed projects include petrochemical plants, oil refineries and other industries.

Groundwater Act B.E. 2520 (1977) establishes effluent standards for water discharged into deep wells by industry.

Factory Act B.E. 2521 (1978) on Industrial Waste Water Pollution Control establishes an effluent standard for various industries, with reference to different chemicals and other matters.

Factory Act B.E. 2535 and Dangerous Act B.E. 2535 contains rules and regulations on air pollution and hazardous waste control.

6.3 Mining legislation

125. The Mineral Act of 1967, amended several times, has as its main objective the management of mineral resources through accelerated mineral exploration and optimum exploitation of identified mineral reserves. The need to protect the other natural resources and to assure the safety of the people is equally considered. In the granting of a mining lease, environment protection conditions determined after the EIA review, including monitoring, are integrated and form part of the conditionalities. In addition, fifteen sections that relate to environmental protection and rehabilitation/reclamation are included in the Act (see **Appendix Thailand-2** for details).

126. A significant section of the Act relating to pollution control is Section 55 which imposes a surface rental fee in addition to the normal fee for the mining concession. This fee is equal to 10 per cent of the royalty and is paid to the Department of Mineral Resources (DMR). The funds will be used to reclaim mined areas, and to develop areas where mines are located. A proposed Thai Miner's Environmental Fund would convert 62 per cent of the total royalty into an environmental bond that would be deposited in an escrow account to be administered by the DMR. The accumulated environmental bond and interest would be returned to the mining company, regardless of the actual cost of reclamation, for the restoration of the mine site to an acceptable state.

127. Other ministerial regulations addressing mining environment issues are:

Ministerial Regulation No. 10 (1970) which prescribes standards concerning water pollution.

Ministerial Regulation No. 25 which defines rules and processes for ore dressing and metallurgy. Ore dressing and metallurgical operators must conduct their operations according to the flow sheets and processes they have specified to the Local Mineral Resource Office.

The **Improvement and Conservation of National Environment Quality Act B.E. 2535 (1992)** which requires mining projects to submit an Environmental Impact Assessment report to be reviewed by experts appointed by the National Environment Board.

The **Forest Reserves Act** which contains regulations concerning the delineation of forest reserves in Thailand.

6.4 Institutional framework

128. The National Environment Board (NEB) and the Department of Mineral Resources are the two government agencies responsible for the implementation of environmental measures related to mining.

129. Under the 1992 ICNEQA, the National Environment Board was given a "quasi cabinet" status in matters concerning the environment under the responsibility of the Ministry of Science Technology and Environment (MOSTE). The Prime Minister, the Minister of Science, Technology and the Environment and eight other Ministers are members of the Board with the under-secretary of the MOSTE serving as the Board's secretary.

130. Three other agencies were established under the 1992 Act, namely: the Office of Environmental Policy and Planning (OEPP), the Pollution Control Department (PCD) and the Environmental Quality Promotion Department (EQPD). Whereas the NEB's responsibility is merely advisory, the three new agencies can take affirmative steps to protect natural resources. They can also take corrective measures concerning pollution of the nation's air, water and land.

131. Under the 1992 Act, the agencies are authorized to set standards for the quality of the environment in various situations and conditions. The Act empowers the Deputy Minister of MOSTE to designate as an environmentally regulated site an area that:

- contains a water source;
- possesses an ecological balance more sensitive to change or destruction than that of other areas;
- is valuable in its natural state; or
- contains work of art that are worth preserving.

132. The NEB can also declare certain areas to be "pollution-control sites" and initiate steps to control, reduce and eradicate pollution. Standards or regulations can be set in order to control pollution either at its source or at the dispersal stage.

133. Additionally, a large share of responsibility belongs to the provincial governments, particularly the provincial governors of the territories designated as environmental regulation sites or pollution control areas. Moreover, provincial governors have the duty to develop an administrative plan for environmental management at the "jangwad" stage. They can impose standards, regulating pollution at its source, that are higher than those established by MOSTE (Hydrocarbon Asia 1993).

134. The Department of Mineral Resources (DMR) under the Ministry of Industry is the government agency concerned with the administration of mine waste pollution control and enforcement of mining law. DMR is also responsible for issuing licenses, monitoring compliance, and enforcing regulations for mining activities. For mineral resources environmental management, DMR has established an Environmental Division with the following responsibilities:

* Investigate the environmental problems resulting from mining activities;
* Assist the NEB in carrying out all its functions relating to mineral resources development;
* Cooperate with the NEB to evaluate the Initial Environmental Examinations (IEE) and Environmental Impact Statements (EIS) of mineral exploitation projects;
* Advise mining companies regarding techniques and/or equipment which can be employed to avoid or correct environmental hazards associated with the industry, and;
* Advise the companies in the preparation of the IEE and the EIS, in order to obtain a correct inventory without expending unnecessary time and funds in the process.

6.5 Environmental impact assessment legislation and practice

135. In response to increasing environmental concerns, the EIA was adopted in Thailand in July 1981 as a tool for environmental planning and management.

136. Under the old ICNEQA (which was amended in 1975, 1978 and 1982), a proposed mining project of any size must submit an EIA report to the Office of National Environment Board (ONEB) for approval before commencement of operations. The report must fully address any aspects relevant to the environment. The role of ONEB is to review the report and assess its competency, to request additional work if any is lacking, and to determine whether the project should be approved based on a balancing of its "permits for improving the national welfare versus its impacts on environmental resources" (Suwanasing, 1992), and if approved, to specify the conditions to be applied to project implementation including requirements for continuous monitoring. EIA reports can only be prepared by qualified consultants who have the appropriate license from the ONEB. The consultants may ask ONEB to establish terms of reference for a specific project. Upon completion of the EIA report, the investor has to submit copies of the EIA report to the "one-stop service center" established by the Board of Investment (which administers the Investment Promotion Act).

137. Under the Improvement and Conservation of National Environmental Quality Act, the EIA reports are reviewed by the OEPP and a Committee of Experts appointed by the NEB and composed of expert members who are qualified or specialized in various fields and the authority legally competent to grant permission for the given project. The representative of the DMR is on the Committee of Experts for mining project

consideration (Suwanasing 1992).

138. The OEPP pre-reviews the report and notifies the proponent within fifteen days if more information is needed. For the complete EIA, OEPP makes preliminary comments on the report. Failure to conclude the review within 45 days results in it being automatically approved (Suwanasing 1992, see **Appendix Thailand-3**).

7 Vietnam

7.1 Constitutional framework

139. Relevant provisions of the Socialist Republic of Vietnam's Constitution of 1980 on the use of natural resources and environmental protection are contained in two articles:

> Article 36 states that "state bodies, enterprises, cooperatives, people's army units and citizens shall be liable to implement the policy of protection, transformation and regeneration of natural resources protection and improvement of human environment".
>
> Article 19 stipulates that "the land,..., mines, natural resources in the ground, in the territorial seas, and in the continental shelf,..., and other property defined by law as belonging to the state are under the ownership of the entire people".

7.2 Environmental legislation

140. General environmental legislation does not exist at present. However, crucial legislation - **the Draft Environmental Protection Law** - is under consideration by the National Assembly. The proposed law aims to "fulfil the tasks of protection and improvement of the environment to efficiently serve the socio-economic development, to bring happiness and culture to people, and to actively contribute to the task of environmental protection in the region and in the world". The law, which is currently the subject of public hearing, and which will probably undergo further modifications, will not be discussed here.

141. Sectoral legislation has been enacted in line with the Constitutional mandate and has created the first important foundation for the protection of environment and natural resources. This legislation includes **Law on Land Resources (1987, with 1993 amendments), Articles of State-owned Industrial Enterprises (1988), Ordinance of Protection and Development of Aquatic Resources (1989), Law on the People's Health Care (1989), Law on Forestry Resources (1992), Law on Foreign Investment (1987) and Ordinance on Mineral Resources (1989).**

142. Two of these laws have a major influence on mining environment issues: the Law on Foreign Investment and the Law on Land Resources.

143. **Article 34 of the Law of Foreign Investment** states that "the enterprise with foreign invested capital shall be liable to take necessary steps for protection of the environment in the course of its operation."

144. **Article 46(4) of the Regulation for the implementation of the Law on Foreign Investment (Decree No. 139/HDBT 1988)** stipulates that with respect to a joint venture, serious pollution of the environment caused by the activities of the joint venture, and where no immediate possibility to control the pollution exists, is grounds for termination.

145. In addition, **Article 62** of the above regulation empowers the State Commission for Cooperation and Investment to issue a decision for temporary discontinuance of the operation of the enterprise or for its dissolution if serious pollution of the environment occurs without any effective measure to control it.

146. **Article 39 of the Law on Land Resources 1987** states, with specific reference to mining, that "at the termination of its use, the land shall be returned in the state as described in the land allotment decision of the State authorities concerned".

147. Mining is considered a "specialized land use". Under **Article 45** of the Law on Land users of specialized land are mandated to take necessary measures aimed at achieving economical land use, protecting the environment and avoiding any interference with the productive activity and ordinary life of the people in adjacent areas. **Article 48** provides for land protection, transformation and fertilization and obliges the user to refrain from all acts harmful to the environment or the legal interest of users of adjacent lands.

7.3 Mining legislation

148. A new Mining Law drafted with the assistance of UNDP and ESCAP is under consideration. This again will not be discussed here except to say that the new law is more detailed and comprehensive than the present one. At present, general legislative provisions for the management of mineral resources and the protection of the environment are found in the **Ordinance on Mineral Resources** enacted by the State Council in 1989.

149. **Article 9** of the Ordinance provides that state management bodies, social organizations and citizens are obliged to protect mineral resources and the surrounding environment. State bodies are responsible, in accordance with their powers and obligations, for giving full consideration to the recommendations of social organizations and individuals made with regard to the implementation of measures for the management and protection of mineral resources and the surrounding environment. The state protects the interests of local residents of the area where the mine is located.

150. **Article 12** mandates the People's Committees to be responsible for the creation of conditions for the use of land and for allocating lands in accordance with the provisions of **Law on Land Resources** to organizations and individuals carrying out a

registered geological exploration. This article is expounded in the Law on Land Resources which classifies land for exploration and exploitation of mineral resources as specialized land (Art. 36). Only those organizations which are assigned by the state to conduct exploration and production of minerals can use land for these purposes and land for exploration and production of minerals is allotted only during the period of active exploration and production (Art. 39).

151. **Article 13** obliges the holder of an exploration permit to use technical and industrial methods to protect the mineral resources and surrounding environment, to ensure the safety of the exploration activity and to pay compensation for damage caused by geological exploration.

152. **Article 16** stipulates that one of the factors to be taken into consideration in the allocation of a mineral exploitation field and permit is the method to be adopted for protection of the environment, historical and cultural buildings and famous landscapes and for ensuring security and defence. This article is elucidated in **Decision No. 588** of the Ministry of Heavy Industry (1992) which states that the consent of the concerned agencies or approval of Prime Minister must be obtained before mining in areas with fixed construction, high population density, historical and cultural relics, places of scenic beauty, national parks, national land, survey marks or defence areas.

153. **Article 19** requires the submission of a feasibility study and plan before the granting of a mining lease. The feasibility study and plan has to include:

a) Logical organization of surface and underground works to ensure maximum extraction from mineral reserve and safety in the mine;
b) Technical procedures and systems to ensure maximum exploitation and combined recovery of primary minerals, other minerals and accessory minerals; and
c) Mine safety, environmental protection measures and rehabilitation of the land in order that it may be used reasonably after mining.

154. **Article 21** enumerates the obligations of organizations and individuals exploiting mineral resources:

a) Complying with decisions regarding assigned mining areas, exploitation programme, approved decisions regarding processing of minerals, mine safety and related environmental protection measures;
b) Carrying out measures to reduce costs, obtaining maximum discovered minerals in the assigned mining area, preventing actions of deliberately choosing high grade minerals and from leaving out parts of mineral reserves in the list of its resources, building fixed constructions or dumping of waste soil or rocks in unexploited mineral resource areas; and
c) Compensating damages caused by mining and rehabilitate the land in order that it may be used reasonably after completion of mining.

155. **Article 23** states that when the mine is closed for maintenance or when mining

operations have been terminated, the mining lessee has to take all measures necessary to ensure the safety of the mine, maintain data regarding mineral geology and protect unexploited mineral resources and surrounding areas.

156. Closure of the mine is also addressed in **Decision No 828** of the Ministry of Heavy Industry (1992). It provides that the holder of a mining license must carry out activities to close the mine for liquidation in accordance with the approved report for the closure of the mine by the agency that granted the mining license (Article 5).

157. **Article 35** stipulates that any person who is carrying out geological exploration or exploitation of mineral resources illegally, causing excessive losses of mineral resources or violating any of the provisions of the Ordinance shall, according to the degree of seriousness of the offence and the nature of the act committed, be subject to disciplinary action, administrative punishment or criminal prosecution in accordance with the provisions of the law.

158. Another clause of importance is **Article 22** which stipulates that the mineral exploitation field may be repossessed "due to the needs of the state and society". In this case, the investor is compensated for real loss and allocated another mineral field to exploit if required.

159. Based on the articles and decisions mentioned, protection of the environment is an obligation imposed on the holder of a mining license as provided for under the provisions of the Ordinance on Mineral Resources. Specific terms and conditions of the mining license may include the rehabilitation of the mine after mining and limitations on water and effluent discharges based on international standards.

7.4 Institutional framework

160. The sectoral legislation is enforced and implemented by the relevant sectoral authority in coordination with provincial authorities and the Department of Environment (DOE) within the Ministry of Science, Technology and Environment (MSTE).

161. The MSTE is the over-all policy maker for environmental rules and regulations. It has set a few sectoral standards such as those concerning drinking water. However, it has not yet established standards affecting sectoral activities such as specific standards and procedures for water and effluent discharges or noise and dust emissions.

162. Under **Decree No. 95** (1992), the Ministry of Heavy Industries (MHI) is assigned the duties and functions of assisting the Council of Ministers in state management of mineral resources. It is responsible for policies and regulations concerning the management of mineral resources and supervises the implementation of regulations throughout the country (Article 4). The State Department of Mineral Resources Management under the MHI is charged with implementing mineral resources policy. The decree also states that the People's Committees at all levels are responsible for the implementation of the Ordinance and regulations and decrees of the Council of Ministers and the Minister of heavy Industry and that each committee has the power to prevent.

suspend operations and otherwise deal with breaches of regulations concerning the protection of unexploited minerals and related environment.

7.5 Environmental impact assessment legislation and practice

163. Environmental planning as a tool for environmental protection has been a part of policy since 1980. Since 1990, there has been a steadily increasing acceptance of the Integrated Environmental Planning concept as an important factor in the national, regional and local planning process. The objectives of the environmental plan are to establish a sound socio-economic balance between natural resources exploitation and environmental protection, to identify short term and medium term activities for environmental protection, to set guidelines for effective long term planning and to provide measures to be undertaken to rehabilitate damaged areas.

164. On 25 February 1993, the Prime Minister issued Ordinance No.71/TTg concerning Environment Protection. Article 6 states that "the Ministries and localities during the process of elaboration of development projects, including co-operation projects with foreign countries, in the frame of feasibility studies must carry out Environmental Impact Assessment. The Ministry of Science, Technology and Environment (MSTE) is responsible for the review of EIA reports...".

165. Draft EIA regulations were prepared in 1992 by the Center for Resources and Environmental Studies (CRES), Hanoi University. These formed the basis of EIA Instruction for Development Projects prepared by MSTE. The draft regulations describe the EIA procedure and determine the role of the project proponent (EIA reporter) up to the level where decisions are made. It is reported that CRES is elaborating (the) EIA guidelines for different types of development projects based on EIA guidelines issued by World Bank, Asian Development Bank and ESCAP.

166. Environmental studies and assessments conducted in key areas of the country have revealed that environmental degradation is becoming more serious despite the existence of sectoral legislation concerning the protection of environment and natural resources. The environmental degradation is due to poor implementation and ineffective sectoral legislation; a lack of standards, procedures and specific rules for protection of the environment; insufficient funds, modern technology and equipment; scarcity of specialists; lack of integration of activities between conservation and development; and the absence of a comprehensive and integrated environmental law.

167. Environmental protection is a new concept in Vietnam. Assurance of environmental protection is based only on the terms and conditions of mining license. The mining license, however, does not include provisions for termination in cases of environmental pollution and no rehabilitation fund has to be established.

168. Monitoring of environmental protection is a shared responsibility of the State Department of Mineral Resources Management under MHI, the Department of Environment within the MSTE, the Ministry of Labor and the People's Committees. The actual monitoring is carried out by the mining licensee.

Notes

1. R. Salazar (1992) considers the provision for technical and financial assistance agreements to be a recognition on the part of government that mining is a capital intensive industry which may require 100% foreign investment.

2. Dhar (1991) reports that this administrative order as far as mining is considered in today's context is the most significant one from the "sustainable development" point of view. It is noteworthy that the government of the Philippines anticipated the requirements of such a provision in its "Mineral Resources Development Decree of 1974".

3. Any new business or any new undertaking requiring the approval from BOI must obtain an ECC prior to its approval.

III COMPARATIVE REVIEW

169. The environmental impact of the mining and metals industries, both direct and indirect, is well understood in the countries studied. Mitigating technology is available and is continuously becoming more effective in response to the increasing demands being made on mining companies to conform to high standards of environmental management. Nevertheless, examples of degradation of the environment resulting from mining operations in the countries concerned raise questions about the efficiency and appropriateness of the legal and institutional framework.

1 Constitutional framework

170. In all the countries studied except Malaysia the concern for environmental protection is explicitly expressed in the Constitution (see table 1). This highlights a national priority and serves to influence future legislative policies and executive actions in matters pertaining to the environment. A clear constitutional mandate provides legal justifiability and prevents confusion and inefficiency in enforcement caused by challenges to government environmental protection initiatives.

Table 1 Constitutional Provisions for Environmental Protection

India	Directive Principles of the Constitution: " State shall endeavour to protect and improve the environment and safeguard the forest and wildlife of the Country" (Article 48A). Protection of the environment is the duty of every citizen (Article 51A(g)).
Indonesia	The Constitution establishes the principle of management of environmental resources for the greatest welfare of the people (Article 33 paragraph 3).
Malaysia	Implicit reference in the Constitution
Papua New Guinea	The Constitution calls for natural resources to be conserved and used for the collective benefit of a land of future generations; the environment is to be adequately protected and conserved (Fourth and Fifth Principle).
Philippines	Declaration of Principles and State Policies: "The State shall protect and advance the right of people to a balanced and healthful ecology in accordance with the rhythm and harmony of nature". Also provides for mandatory sustainable development considerations for natural resources (including mineral resources), economy and patrimony.
Vietnam	Article 36 of the 1980 Constitution provides: "State bodies, enterprises, cooperatives, people's army units and citizens shall be liable to implement the policy of protection, transformation and regeneration of natural resources protection and improvement of human environment"

2 Environmental legislation

171. Environmental legislation provides the framework establishing basic environmental protection policies and the institutional machinery. It deals with the ways environmental

decisions are to be made and by whom. Specifics regarding legal enforcement are provided by implementing rules and regulations. A very important feature of environmental legislation is the legal requirement for permits and licensing prior to commencement of operations. Through the imposition of conditions intended to protect and conserve the environment, the licensing authority plays a vital role in minimizing adverse effects on the environment.

172. The predominant approach to licensing is the command and control strategy. This strategy maximizes the ability of the regulator to control where and how resources will be spent to achieve environmental objectives. It also provides the regulator with a reasonable degree of predictability as to the amount of reduction in pollution. The approach generally requires the government regulator to prescribe specific health or ecology based ambient environmental objectives, specify standards or limits for the three forms of emission (air, water and solid waste) and impose performance standards (Bernstein 1990). Standards may be specified in terms of the technology and processes to be used in order to prevent environmental degradation, or they may specify the amount of pollutants that can be discharged, the allowable discharge concentration, or the amount of pollutants that must be removed prior to discharge, allowing operators to choose how the standards are to be met. Most of the countries studied have introduced regulations of the latter kind.

173. Governments often find it difficult to formulate standards and guidelines. Impressions gained during the interviews suggest a general lack of detailed information on production processes and on the suitability of various pollution control devices as well as a lack of baseline information concerning the ecosystems to be protected or conserved. There is a general tendency to copy Western standards which are more often than not inappropriate. This results in an inadequate response to environmental challenges and may produce an expensive environmental burden later on. There is thus a need for criteria and standards that are better suited to the cultural setting of the countries.

174. A disadvantage of the command and control approach is that it disregards the relative efficiency of individual polluters in achieving reduced pollution. Some polluters are likely to be able to achieve a given pollution reduction target at lower cost than others. Consequently, the reduction of pollution per unit of cost is likely to be less than that which could potentially be achieved. Moreover, the approach has a limited impact on experimentation and introduction of new technologies (Walde 1992). It is of course recognized that operators will try to limit the cost of achieving a given pollution target, but they have no incentive to innovate in order to reduce pollution beyond the target.

175. Accordingly, economic instruments such as pollution taxes, fees or subsidies are receiving increasing attention, since from the point of view of economic efficiency they are, at least in theory, likely to produce results that more closely approach optimum. General acceptance of the "polluter pays principle", which states that the cost of environmental degradation should be reflected in the costs experienced by the polluter, has also served to focus governments' attention on the costs - both monetary and non-monetary - of pollution. The polluter pays principle is not irreconcilable with a command and control approach. Indonesia's Act No. 4 1982, according to which anyone who causes pollution of the environment resulting in loss or harm to others is liable to pay

compensation, represents an attempt to internalize environmental costs. Conditionalities attached to recently approved EIAs in the Philippines which explicitly require the setting up of funds for compensation purposes is another example. Other economic instruments such as pollution charges or taxes are not yet used in the countries studied. An argument often cited against economic instruments is that they can be misconstrued as a license to pollute. In addition to this political argument, there are several other reasons for the reluctance of most of the countries studied to use economic instruments. Governments are unwilling to be seen to negotiate with polluters over environmental effects and they are not confident about their abilities to estimate the economic value of the environment. For economic instruments to work, an effective and credible system of ascertaining actual pollution has to be established. While this applies also to the command and control approach, the requirements are seen by governments - rightly or wrongly - as being more stringent if economic instruments are to be used. From the perspective of the countries studied, a major weakness of economic instruments is that they require a higher degree of sophistication in the institutions responsible for implementation and enforcement.

176. The prevailing sentiment among all the countries studied is that the existence of elaborate environmental protection laws does not suffice if they are not effectively implemented or applied. In fact, inadequate implementation and enforcement appear to be critical shortcomings in most of the countries studied. They result from a variety of reasons, of which the most important are inadequate budgetary allocations and a lack of political will on the part of the policy makers and implementors. The inadequate financial resources result in a lack of personnel with sufficient motivation, administrative leverage, access to information, integrity and capability to identify environmental obligations applicable to mining projects and to impose effective sanctions. Qualified personnel often leave government service for the private sector as a result of the uncompetitive remuneration. Shortages of equipment and laboratory facilities exacerbate the difficulties. Finally, inadequate cooperation between authorities at the national and local levels often leads to shortcomings in policy implementation.

3 Mining legislation

177. The institutional and legal frameworks for mineral resources development in the countries studied are summarized in Table 2.

178. Environmental management and pollution control in the mining and metal industries are issues that have long been recognized as important, as evidenced by the mineral resources legislation of the countries studied. Table 3 summarizes general environmental provisions included in the mining legislation of the countries studied.

Table 2 Institutional and legal frameworks for mineral resources development

Country	Ministerial institution and legislation
India	Department of Mines (non-fuel mineral resources) under the Ministry of Mines Ministry of Steel (for iron ores) Ministry of Energy (for energy resources)
	Mines and Minerals (Regulation and Development) Act of 1957 with several amendments
Indonesia	Department of Mines and Energy with Central Commission for Environment and Technical Commission for Environment Ministry of Industry (for Metal Industries)
	Mining Law No. 11 of 1967, in which environmental considerations play an important role.
Malaysia	Federal Ministry of Primary Industries with Departments of Mines and Geological Survey State Departments of Land and Mines
	Mining Enactment 1929, corresponding state legislation
Papua New Guinea	Department of Minerals and Energy
	Mining Act of 1992
Philippines	Department of Environment and Natural Resources with Mines and Geosciences Bureau DENR Regional Offices on Mines and Geosciences Development Services
	Presidential Decree No. 463 Executive Order 279 provisions on co-production, joint ventures and profit sharing agreements
Thailand	Department of Mineral Resources within the Ministry of Industry
	Minerals Act of 1967
Vietnam	State Department of Mineral resources within the Ministry of Heavy Industries
	Ordinance on Mineral Resources of 1989

Table 3 Environmental provisions of mining legislation

Country	Legislation/General Environmental Provisions
India	**Mines and Minerals (Regulation and Development) Act of 1957 with amendments** -Amendment of 1986 incorporates stringent environmental provisions including suspension/termination of mining lease if lessee is found violating environmental conditionalities. -Section 13 provides for framing rules for the "proper disposal or discharge of any slime or other waste products arising from any mining or any metallurgical operations carried out in the mine". -The Government has powers to draw up rules regarding the terms and conditions under which a license may be granted.
Indonesia	**Mining Law No. 11 of 1967** -Safety and environmental conditions attached to licensing procedure -Contract of Work conditionalities substitute for rules and regulations. Also incorporate environmental protection measures and monitoring.
Malaysia	**Mining Enactment 1929, corresponding state legislation** -No mining operator may allow effluent "containing solid matter in excess of the amount prescribed by rule" to discharge into "any river or natural water course or otherwise to pass beyond his control". -Authorizes the Inspector of Mines to prescribe methods for the disposal of solids and to order that precautions are taken to ensure that such materials are not washed away from disposal sites
Papua New Guinea	**Mining Act of 1992** -Provides for the mandatory convening of a "development forum" prior to granting of license as a mechanism to resolve contentious issues, including environmental issues. -Social impact assessment and social monitoring by mining companies
Philippines	**Presidential decree No. 463** -Punishes any person who wilfully causes or permits sludge, tailings or other mine waste to accumulate or flow from his mining claim so as to cause damage, injury or destruction to any public land, river, stream or other public property **Presidential Decree No. 1251** -Imposes a fee on mine waste and tailings to be used exclusively for payment of damage caused to private property **Executive Order 279** -Incorporates environmental provisions into co-production,joint venture and profit sharing agreements
Thailand	**Minerals act of 1967** -Prohibits muddy water and silt arising from mining to flow outside the boundaries of the mine -Direct concessionaires to prevent the introduction of any elements of the mining process that are harmful to persons, animals, plants or property into the environment
Vietnam	**Ordinance on Mineral Resources of 1989** - Provisions on environmental protection are part of the existing mining legislation

179. In most countries, the rehabilitation or restoration of mining areas to a safe and non-polluting state is required. A statutory obligation to post a rehabilitation/restoration bond to ensure implementation exists only in Thailand and the Philippines (see table 4).

Table 4 Rehabilitation Provisions

Country	Rehabilitation Provisions
India	-Mines and Minerals (Regulation and Development) Act of 1957 - Amendment of 1986 incorporates provisions for rehabilitation of mined out areas and suspension/termination of mining leases if violated.
Indonesia	-Mining Law No. 11 of 1967 has measures for rehabilitation of mined out areas attached to licensing procedure -Contract of Work conditionalities include progressive rehabilitation of mined out areas.
Malaysia	-Mining Enactment 1929 and corresponding state legislation impose as additional terms and conditions to the mining lease, rehabilitation of mined-out areas.
Papua New Guinea	-The mandatory Environmental Plan includes a rehabilitation programme
Philippines	-Provisions regarding rehabilitation and posting of bonds are included under Presidential Decree Nos. 463 and 1586 and Executive Order 279. Presidential Decree No. 1198 provides for issuing of rules and regulations to ensure that all persons engaged in mining shall "to the fullest extent possible restore and rehabilitate lands to their original condition".
Thailand	-Minerals Act of 1967 requires concessionaires to restore the land to its original state after termination of mining activities and requires 10 per cent of the royalty paid to the Department of Mineral Resources to be used to reclaim mined out areas
Vietnam	-Ordinance on Mineral Resources of 1989 provides for rehabilitation of mined out areas

180. Most of the mining laws and codes reviewed have been or are in the process of being amended to bring existing provisions abreast with the trend towards improved environmental management and protection. A distinctive feature of this process is the incorporation into mining codes of specific procedures, in particular to prepare environmental impact assessments and to allow affected communities and environmental groups to raise objections prior to approval of the a project. India, Indonesia and Thailand have specific EIA guidelines for mining projects. EIA provisions are summarized in table 5.

Table 5 Provisions for Environmental Impact Assessment

Country	EIA Provisions/Remarks
India	-Requires environmental clearance (EIA) from the Ministry of Environment and Forest before mining is allowed. Environmental clearance for small scale mining operations is issued by the Indian Bureau of Mines
Indonesia	-Contract of Work conditionalities incorporate the mandatory requirement for an environmental impact assessment to be part of the feasibility study.
Malaysia	-Environmental Impact Assessment made mandatory by EQA (Prescribed Activities) Order 1987
Papua New Guinea	-Granting of license linked to the approval of the Environmental Impact Assessment with extensive provisions for impact predictions and mitigation, monitoring and rehabilitation strategies
Philippines	-Granting of mining lease/license/permits under PD 463 and other profit sharing agreements are subject to the issuance of an Environmental Clearance Certificate granted under the EIA system.
Thailand	-Provisions concerning EIA are integrated with and form part of the conditionalities attached to the mining lease.
Vietnam	-EIA mandated by Ordinance No. 71/TTg

181. Impressions gathered from literature and interviews indicate that mining no longer enjoys automatic precedence, if ever it did, over other land-uses and environmental concerns. If at all granted approval, at the very least, mining has to conform with stringent and costly mitigation obligations, often combined with compensatory payments for environmental purposes.

182. Specific obligations emanating from general environmental law, specific laws on air, water pollution and waste disposal, and the mining law itself are frequently applied by incorporating the restrictions and other requisite measures in the impact statement and in the mining licenses or agreements. Standard requirements include the construction and operation of pollution control structures such as ponds and dams for tailings impoundment in metal mines and the installation and operation of electrostatic precipitators in cement plants. The requirements are usually supplemented by provisions for monitoring and reporting.

183. Simple forms of "pollution trading" are practiced in India and the Philippines. In India, compensatory afforestation must be undertaken whenever a forest area is used for a non-forest purpose such as mining, while the "Adopt a Tree Adopt a Mining Forest" project in the Philippines is a competitive form of inducement to promote environmental protection.

184. Another trend in the countries studied is the inclusion of an analysis of the socio-cultural impact of mining proposals in order to fully understand how a mine will affect and be received by neighbouring communities. Papua New Guinea is formulating

guidelines for the integration of social impact assessment and social monitoring into the larger process of environmental planning. Submissions to the proposed Philippine Mining Code highlight the need to incorporate into the code the rights of indigenous/cultural minorities as well as neighbouring communities (E. Caballero 1993).

185. A general shortcoming of the environmental provisions in mining codes, regulations and mineral agreements is that environmental obligations are formulated in general terms, sometimes amounting to a vague statement that firms must respect and to a reasonable extent minimize damage to the environment and undertake rehabilitation activities. In some cases, this general statement has far-reaching implications, as when restoration of mining areas to their original state is set as a requirement.

186. Restoration to pre-mining state might be the most desirable solution in principle. However, this solution, no matter how desirable, is often not technically or economically feasible, especially in the case of large open pit operations such as Bougainville Mines in Papua New Guinea or the Atlas Consolidated Mining and Development Corporation operation in the Philippines.

187. While it can be argued that broadly worded provisions of law are intended to allow administrators flexibility to formulate more precise requirements as experience accumulates, they could have unintended side effects. From the point of view of large mining investors (the subject of keen competition for investment promotion among the countries studied), generally formulated provisions of law are not very helpful since they need to fully understand their environmental obligations in order to assess investment and operating costs. Countries that have established unambiguous and concrete environmental protection legislation or have experience of including equivalent provisions in mineral agreements have better opportunities to attract foreign investment and are probably better equipped to manage and protect the environment.

188. On the issue of enforcement of environmental regulations, government power is at its lowest point when it comes to small scale mining. Where no adequate legal provisions have been made for small scale mining, as is the case in many countries, small scale miners operate illegally, and environmental regulations cannot be imposed. Even in the Philippines where small scale mining has been given legal standing, problems such as mercury pollution remain unmitigated. Governments are more likely to get compliance from the large mining operators, particularly those with international mining companies as partners. These companies usually try to maintain a reputation of being good corporate citizens and are willing to invest in safeguards for the environment.

4 Institutional framework

189. The priority accorded to environmental protection in the countries studied is demonstrated by the fact that environmental authorities have been established and strengthened in the last few years. Many of these authorities were set up after the environmental awakening of the 1970s, and then upgraded progressively from agencies charged with pollution control to ministries. Table 6 gives the names of the ministries responsible for environmental protection in the countries studied. Authorities responsible

for matters concerning the mining and metals industries have also been given responsibilities in the area of environmental protection.

Table 6 Ministries responsible for environmental protection

Country	Ministry
India	Ministry of Environment and Forest
Indonesia	Ministry of Environment
Malaysia	Ministry of Science, Technology and Environment
Papua New Guinea	Ministry of Environment and Conservation
Philippines	Department of Environment and Natural Resources
Thailand	Ministry of Science, Technology and Environment
Vietnam	Ministry of Science, Technology and Environment

190. Decentralization of environmental responsibilities, particularly policy implementation, from national to local government authorities has also taken place in most of the countries studied. In Malaysia, state governments play an extensive role in the management of natural resources. DENR in the Philippines has established environment sectors in its regional offices to handle policy implementation. The provincial governments of Papua New Guinea have also been accorded a share of the responsibility in the planning and negotiations of development projects.

191. The difficult task of implementation, enforcement and monitoring can however only be undertaken by national and local institutions with sufficient resources. In this regard, shortcomings exist in all of the countries. Financial resources are usually not adequate for the magnitude of the tasks given to the authorities. Trained and qualified staff is seldom available, one reason being that the government is unable to offer salaries comparable to those paid by the private sector. Problems of coordination between national and local authorities are common.

192. Compliance is further complicated by the priority accorded economic development over environmental protection. In Thailand, for example, the 1989 revocation of forest concessions led to mining being banned in areas classified as forest areas. However, following pressure from the Department of Mineral Resources to allow operations to resume, eight mining certificates were approved in national forest reserves. The Ok Tedi case in Papua New Guinea, where the government was faced with the choice of either permitting serious pollùtion of the sensitive Fly river or see the mine closed is another example.

193. The continued upgrading of government environmental institutions is indeed necessary if integrated policies are to be formulated and defended against other interests.

However, experience in the countries studied shows that environmental problems can not be left to environmental agencies to solve on their own. If implementation, enforcement and monitoring is to improve, environmental authorities need to delegate or coordinate surveillance and enforcement functions with sectoral agencies. Sectoral agencies, including those dealing with the mining and metals industries, usually have infrastructure for monitoring and enforcement in place. This infrastructure can be used also for environmental monitoring and enforcement, often with greater efficiency than if the task were to be carried out by the environmental authorities. The principal environmental agencies can then concentrate on performing their monitoring, policy analysis, advocacy and coordination roles more efficiently. Any fear of complacency on the part of sectoral agencies in enforcing environmental policies in sectors for which they are responsible could be addressed by having monitoring programmes prepared jointly by the environmental agency and sectoral agencies. Networking with existing local non-government organizations acting as "whistle blowers", as is done by BAPEDAL in Indonesia, could also provide safeguards.

5 Environmental impact assessment

194. Environmental Impact Assessment (EIA) is a widely accepted tool for ensuring that environmental concerns are fully taken into account in the project planning process. As regards the use of EIA, countries can be classified into two groups. Countries in the first group, which includes Indonesia, Malaysia, Papua New Guinea and the Philippines, have specific EIA legislation. Attendant regulations and guidelines are revised from time to time as experience accumulates (for example, the Philippines is presently deliberating on a "programmatic approach" aimed at making the EIA implementation more workable). Countries in the second group, consisting of India, Thailand and Vietnam, have general environmental protection legislation with EIA provisions. Table 7 shows the legal basis and outline of EIA systems in the countries studied.

Table 7 Outline of EIA systems

Country	Legal basis	EIA adopted year	Implementing agency	Role of IEE*
India	No specific EIA legislation but environmental legislation empowers government agencies to require EIA	1978	Impact Assessment Division of the Department of Environment, Forest and Wildlife in the Office of the Prime Minister	Preliminary screening
Indonesia	Act No. 4 of 1982, Basic Provision for the Management of the Living Environment (Article 16) Government Regulation No. 29 1986 regarding EIA Presidential Decree No. 23 1990, creation of BAPEDAL	1986	Department of Environment BAPEDAL (Environmental Impact Management Agency Central AMDAL (IEA) Commission in each line agency Regional AMDAL Commissions	Preliminary Environmental Information Report and screening

Malaysia	Environmental Quality Act 1974, amended in 1985, section 34A Environmental Quality of Prescribed Activities (Environmental Impact Assessment) Order 1987	1988 mandatory	Department of Environment under the Ministry of Science, Technology and Environment	Preliminary assessment and screening
Papua New Guinea	Environmental Planning Act 1978	1978	Department of Environment and Conservation under the Ministry of Environment and Conservation	n.i.a.
Philippines	Presidential Decree 1586 establishing an Environmental Impact Assessment System Presidential Decree 1151, Philippine Environmental Policy 1977 Presidential Decree 1152, Philippine Environmental Code 1978	1978	Environmental Management Bureau of the Department of Environment and Natural Resources (DENR) Environmental Management and Protected Areas Sector of DENR Regional Offices	Preliminary assessment (Project Description) and screening
Thailand	No specific EIA legislation but environmental legislation empowers government agencies to require EIA Enhancement and Conservation of National Environmental Quality Act B.E. 2535, in force 4 June 1992	1978, amended 1992	Office of Environmental Policy and Planning under the Ministry of Science, technology and Environment	Preliminary assessment and screening
Vietnam	No specific EIA law but Ordinance No. 73/TTg deals with EIA	1993	Ministry of Science, Technology and Environment	n.i.a.

*Initial Environmental Examination
n.i.a. = no information available

195. The legislation varies from country to country. Some of the more important institutional arrangements for review and approval of EIAs are shown in table 8. Procedures for initial environmental assessment are introduced in order to judge the necessity of a full-scale EIA and to design a scope or terms of reference for EIA studies. It is noteworthy that Indonesia, Malaysia and Thailand have adopted qualification systems for EIA experts aimed at ensuring quality EIA studies and reports. However, absence of a qualifying system does not necessarily indicate that reports are inadequate as seen in the cases of Papua New Guinea and the Philippines which have produced EIA reports of international standards.

Table 8 Institutional arrangements for review and approval of EIAs

Country	Consultation with local authority	Exemption from EIA requirement	Public participation	Penalty for violation	Qualification of EIA experts	Post-EIA activities
India	Yes	No	No	No	No	Results are integrated into environment management plan Monitoring of mitigating measures
Indonesia	Yes	No	Yes	No	Licensing and registration of experts	Inputs to environment management plan and monitoring
Malaysia	No	No	Yes	Yes	Informal registration of experts	Monitoring
Papua New Guinea	Yes	Yes	Yes	Yes	No	Inputs to national plan and environment management plans
Philippines	No	Yes	Yes	Yes	No	Issuance of Environment Compliance Certificate Compliance monitoring, posting of EGF
Thailand	No	No	No	No	Registration of consulting firms	Monitoring
Vietnam	n.i.a.	n.i.a.	n.i.a.	n.i.a.	n.i.a.	n.i.a.

n.i.a. = no information available

APPENDICES

Indonesia

APPENDIX Indonesia-1

Core of Mineral Regulatory System

* Article 5, paragraph (1) and Article 33 of the 1945 Constitution
* Decree of the People's Consultative Assembly No. XXI/MPRS/1966
* Decree of the Peoples Consultative Assembly No. XXIII/MPRS/1966
* Decree of the People's Consultative Assembly No. XXXIII/MPRS/1966
* Decision of the President of the Republic of Indonesia No. 163 of 1966
* Decision of the President of Indonesia No. 171 of 1967
* Law No. 11 of the 1967 On Basic Provisions of Mining
* Law No. 1 of 1967 Concerning Foreign Capital Investment
* Government Decree (PP) No. 27 of 1980
* Financial Arrangement for Mining Companies Regulation of 1985
* Contract of Work
* Cooperation Contract

APPENDIX Indonesia-2

Environmental Requirement Attached To A Typical COW

* The company shall include in the feasibility study of each mining operations an environmental impact study to analyse the potential impact of its operations on land, water, air, biological resources and human settlements. The environmental study will also outline measures that the company intends to use to mitigate adverse impact.

* The company shall, in accordance with the prevailing environmental and natural preservation laws and regulations of Indonesia, conduct its operations so as to control waste or loss of natural resources, to protect natural resources against unnecessary damage and to prevent pollution and contamination of the environment, and in general to maintain the health and safety of its employees and the local community. The company shall be responsible for reasonable preservation of the natural environment within which the company operates and especially for taking no actions that may unnecessarily and unreasonably block or limit the further development of the resources of the area.

* The company must operate in such a manner as to minimize harm to the environment and shall use recognized modern mining industry practices to protect natural resources against unnecessary damage, to minimize pollution and harmful emissions into the environment in its operations and to dispose of waste materials in a manner consistent with good waste disposal practices.

* Under the Terms of a typical COW, the Minister may take exception to the

contractor's plans and designs and withhold approval if their implementation would "disproportionately" and unreasonably damage the surrounding environment or limit its further development potential or significantly disrupt the sociopolitical stability in the area. The COW provides that the Minister shall not unreasonably withhold such approval. An arbitration clause of general application is a part of most COW's and could be invoked should the contractor and Minister not be able to resolve their differences.

APPENDIX Indonesia-3

Regulations pertinent to the EIA requirement are listed below:

Regulation No. 1601 K/702/M.PE/1986 concerns the establishment of the Central Commission on Environmental Impact Analysis at the Department of Mines and Energy.

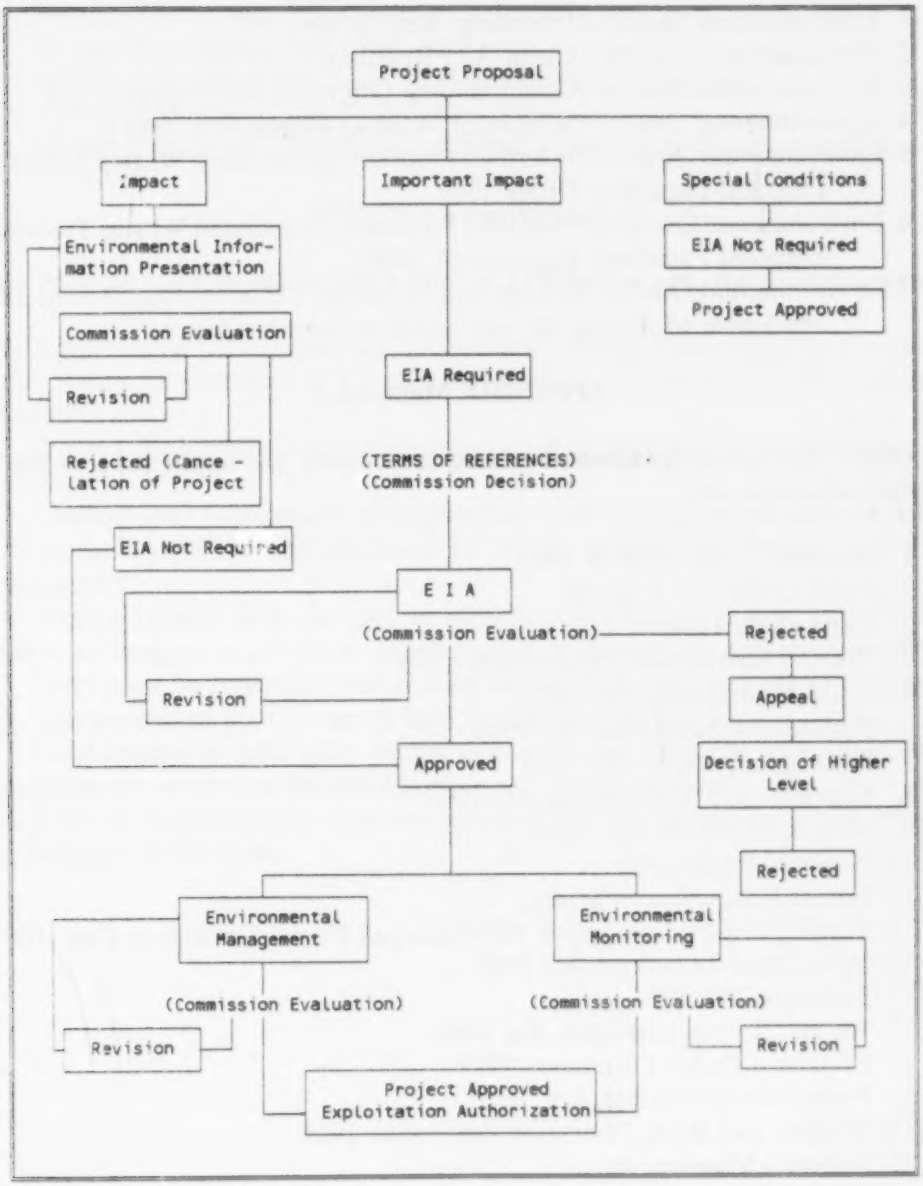
Regulation No. 1119 K/702/M.PE/1987 concerns the creation of a Technical Commission on environmental Impact Analysis.

Regulation No. 0185 K/008/M.PE/1988 elaborates on the formulation, preparation and presentation of environmental information and environmental impact statements in the area of mining in general, as well as for other developmental activities.

Regulation No. 1158 K/008/M.PE/1988 explains the formulation of environmental impact analysis statements for mines and energy undertakings.

APPENDIX Indonesia-4

Indonesia's Environmental Impact Analysis (EIA) based on Regulation NO. 29/1986



Malaysia

APPENDIX Malaysia-1

Other regulations and orders implementing EQA 1974 affecting the mining and metal industries are:

1. Environmental Quality (Licensing) Regulations 1977
2. Environmental Quality (Clean Air) Regulations 1978
3. Environmental Quality (Compounding Offences) Regulations 1978
4. Environmental Quality (Scheduled Wastes) Regulation 1989
5. Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Order 1989
6. Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989
7. Environmental Quality (Sewage and Industrial Effluent) Regulations 1979 (not applicable to mining but applicable to metal industry)

APPENDIX Malaysia-2

Other sectoral environmental-related laws which has application to the mining and metal industries are:

1. National Land Code of 1985
2. Land Ordinance Cap. 68
3. Land Code 1958
4. Water (Amendment) Enactment 1970
5. Local Government Act 1976
6. Radioactive Substance Act 1968
7. Hydrogen Cyanide Act 1953
8. Factories and Machineries Act 1967
9. National Forestry Act 1984
10. National Parks 1980
11. Forest Enactment of States
12. Sabah Forestry Enactment 1968 Sarawak Forest Ordinance Cap. 126
13. Wood Base Industries Act 1985
14. Explosive Act 1957
15. Atomic Energy Licensing Act 1985
16. Protected Places Ordinance 1959
17. Protection of Wildlife Act 1972
18. Wildlife and Birds Protection Ordinance 1955
19. National Museum Act

APPENDIX Malaysia-3

State Mining Laws

1. Mining Enactment F.M.S. Cap. 147 (States of Perak, Selangor, Pahang, Negeri Sembilan, Melaka and Pulau Pinang and Federal Territory of Kuala Lumpur)
2. Mining Enactment No. 69 (State of Johor)
3. Mining Enactment 1347 (State of Kedah)
4. Mining Enactment 1939 (State of Kelantan)
5. Mining Enactment 1340 (State of Perlis)
6. Mining Enactment No. 51 of 1356 (State of Trengganu)
7. Mining Ordinance Cap. 83 (State of Sarawak)
8. Mining Ordinance 1960 (State of Sabah and Federal Territory of Labuan)

APPENDIX Malaysia-4

Common Aspects of Most of the State Mining Legislation are the following aspects:

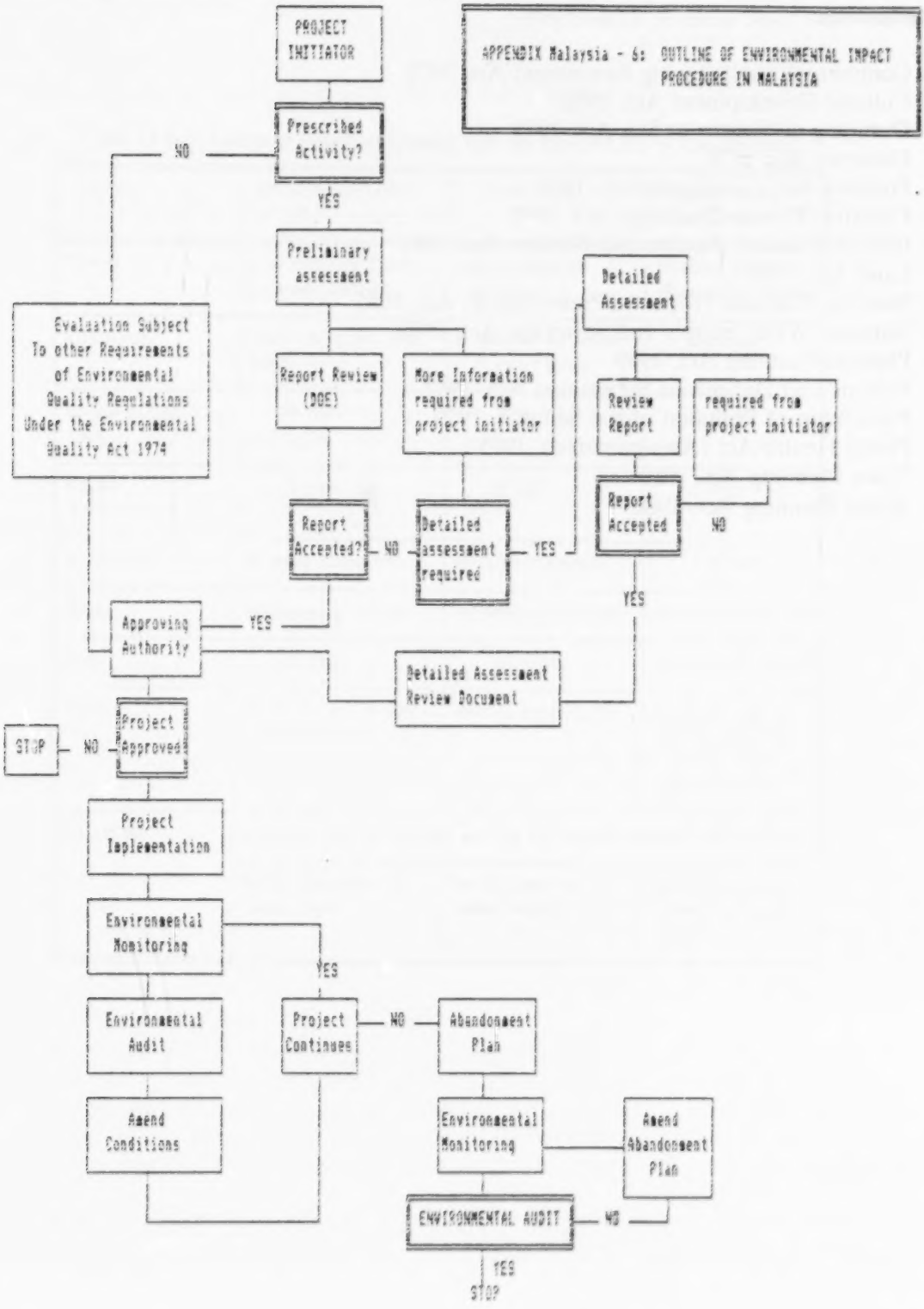
1. Applications for prospecting licenses and mining leases shall be processed by the State's Department of Lands and Mines in collaboration with District Land Office;
2. Prospecting licenses and mining leases shall be approved by the concerned state authority;
3. Control and supervision of exploration and mining operations shall be the responsibility of the Department of Mines within the Ministry of Primary Industries;
4. Mining Lessee shall conduct its mining operations in a safe, orderly, skilful, efficient manner so as not to cause danger or damage to adjacent properties;
5. Land must be converted into mining land prior to the issuance of mining lease;
6. Compensation for the use of land to affected parties;
7. Land reverts to state after mining operation and the state determines the next purpose for which the reverted land is best suited for; and
8. Fine or imprisonment shall be imposed for any violations of the terms and conditions of the lease.

APPENDIX Malaysia-5

State Laws that Regulate the Purchase and Treatment of Minerals and Mineral Ores:

1. Mineral Ores Enactment F.M.S. Cap. 148 (State of Perak, Selangon, Pahang, Negri Sembilan, Melaka and Pulau Penang)
2. Gold Buyers Enactment F.M.S. Cap. 149 (State of Perak, Selangon, Pahang, Negri Sembilan, Melaka and Pulau Penang)
3. Mineral Ores Enactment 1929 (State of Johor)
4. Gold Buyers Enactment 1939 (State of Johor)
5. Mineral Ore Buyers Enactment No. 66 (State of Kedah)
6. Mineral Ores Enactment 1330 (State of Perlis)
7. Mineral Ores Enactment No. 48 of 1356 (State of Trengganu)

APPENDIX Malaysia - 6: OUTLINE OF ENVIRONMENTAL IMPACT PROCEDURE IN MALAYSIA



Papua New Guinea

APPENDIX Papua New Guinea-1

List of other Environmental Legislation of Potential Importance to Mining or Metal Industries

- Continental Shelf (Living Resources) Act, 1972
- Cultural Development Act, 1982
- Dumping of Wastes at Sea Act, 1979
- Fisheries Act, 1974
- Forestry Act, (amalgamated), 1973
- Forestry (Private Dealings) Act, 1971
- Industrial Safety, Health and Welfare Act, 1961
- Land Act, 1962
- National Cultural Property (Preservation) Act, 1965
- National Water Supply and Sewerage Act, 1982
- Physical Planning Act, 1989
- Poisons and Dangerous Substances Act, 1967
- Prevention of Pollution of the Sea Act, 1979
- Public Health Act (Amalgamated), 1975
- Town Planning Act, 1959
- Water Planning Act, 1982

APPENDIX Papua New Guinea-2

Table 1.1 Major Features of Productions Teneaents under the Mining Act 1992 of Papua New Guinea

Teneaent	Special Mining Lease (SML)	Mining Lease (ML)	Alluvial Mining Lease (AML)
Purpose	Mining requiring Mining Developaent Contract	General aining and Quarrying	Expedient aining of alluvials by landowner
Eligibility	Exploration License (EL) holder	EL holder - Any person if vacant ground	Landowner
Maxiaua Initial Tera	40 years	20 years	5 years
Maxiaua Extensions	20 years	10 years	5 years
Maxiaua Area	60 square kiloaeters	60 square kiloaeters	5 hectares
Shape	Rectangular or polygon	Rectangular or polygon	Rectangular or polygon
Depth	Unlisited	Unlisited	Deterained by proposal
Rights	Exclusive right to aine all ainerals according to agreed proposal		Exclusive right to aine alluvials to specified depth to agreed proposal
Obligations	Coapliance with all relevant Acts and with approved proposals and conditions		
	Monthly production and annual reports	Monthly production and annual reports	Monthly production records and annual reports

APPENDIX Papua New Guinea-3

General Guidelines for Environmental Plans

Purpose of the Development

- Development to be related to the Fourth National Goal and Directive Principle of the Constitution
- Compatibility of the proposed development with national and provincial plans and goals, where they apply
- Total capital cost of the development and the economic benefits accruing nationally, provincially and to the immediate community will be stated.

Viability of the Project

1. Technological expertise and resources of the proponent
2. Feasibility investigations
3. The method of site selection, including alternatives investigated
4. Proposed future developments
5. Future benefits, including those at the national and provincial levels

Description of the proposed development

1. Location with maps, including clearings, infrastructural construction or installation
2. The development shown on plans, together with the infrastructure required
3. Details of the operations of the development
4. Life of the development

Development Timetable

1. Description of the sequence of development including clearings, infrastructural construction or installations
2. Development schedule (shown diagrammatically and described)

The Existing Environment

This should be divided into physical, biological and socio-economic components. It is essential to identify those parts of the environment which will be, or will likely be affected by the proposed development and describe them before development occurs. Physical components of the environment consist of geography, topography, soils, geology, meteorology and climate, hydrology and oceanography.

Biological components consist of the plants and animals. The socio-economic component consists of all social and cultural features relating to human settlement both

existing and past; and also includes all infrastructure such as communications, water supplies, health and educational facilities, economic activities, labour skills and administrative and social services.

Environmental Investigations

Detailed presentation of investigations made on those components of the environment likely to be affected by the proposed development.

Environmental Impacts and Safeguards

Impact of the proposed development on the parts of the environment likely to be affected by the development. Of particular importance is the effect of the development on the socio-economic component of the environment. This includes the requirements for additional infrastructure such as roads, water, communications and the local labour force. The development may produce noise, air and water pollutants which need to be described, together with measures designed to mitigate, or alleviate such effects.

Safeguards for the working environment shall be described and emergency procedures and facilities shall also be described in detail. Risk analysis where operations may be hazardous or where dangerous materials are used shall be presented. The visual impact on the landscape, landscape management and end use of the site will be described.

Energy Balance

The energy balance equation for the development will be shown. This is to show energy inputs balanced against energy produced by the development.

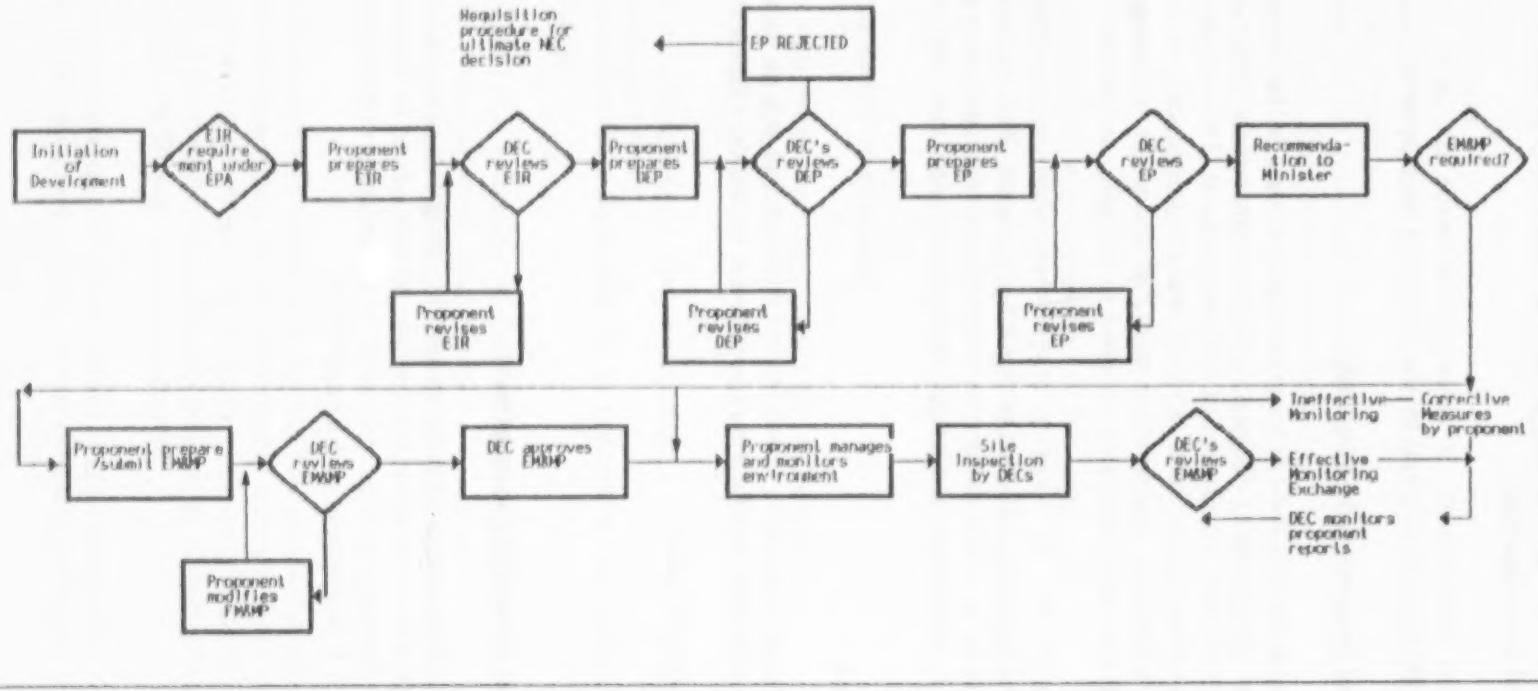
Protection of special sites

Identification and protection of all historical, archaeological and ethnographic sites.

Environmental monitoring management

Details of the environmental monitoring program, as required during the course of the development, to be provided. Include parameters to be determined, the times of which the information is to be provided, in accordance with the requirements of the Department of Environment and Conservation.

APPENDIX Papua New Guinea-3



ENVIRONMENTAL PLANNING PROCESS : DEP - Draft Environmental Plan; EP - Environmental Plan; EMMP - Environmental Management and Monitoring Plan
DEC - Department of Environment and Conservation

Philippines

APPENDIX Philippines-1

Other Significant Laws Used to Bring Environmental Objectives to Bear on Mining, Including Laws Protecting the Major Environmental Media (Air, Water, Land) by Prescribing Limits/ Standards, are summarized below in chronological order.

Presidential Decree No. 984 (18 August 1976) commonly known as the "**Pollution Control Law of 1976**" which declared as a national policy the prevention, abatement and control pollution of water, air and land for the more effective utilization of the country's resources.

Presidential Decree No. 979 (18 August 1976) providing for the revision of **Presidential Decree No. 600** governing prevention and control of Marine Pollution.

Presidential Decree No. 1067 (31 December 1976) which instituted a Water Code, thereby revising and consolidating the laws governing ownership, appropriation, utilization, exploitation, development, conservation and protection of water resources.

Guidelines on the implementation of Section 56 of the PD 1152 - Philippine Environment Code (no date) Re tax incentives for the installation, utilization and operation of pollution control facilities pursuant to P.D. No. 984 and its implementing rules.

Department of Environment and Natural Resources (DENR) Administrative Order No. 52, series of 1989 - Rules and regulations on the participation of non-governmental organization in the DENR programs particularly in natural resources development, conservation, management and protection and the enforcement of laws, rules and regulations for the sustainable development of the country's remaining natural resources for the benefit and enjoyment of present and future generations of Filipinos.

Republic Act (RA) No. 6969 (26 October 1990) - An Act to control toxic substances and hazardous and nuclear wastes, providing penalties for violations.

DENR Administrative Order No. 34 (20 March 1990), series of 1990 - Revised Water Usage and Classification/Water Quality Criteria amending Section Nos. 68 and 69, Chapter III of the 1978 rules and regulations.

DENR Administrative Order No. 35, series of 1990 - Revised Effluent Regulations of 1990, amending the effluent regulation of 1982.

DENR Administrative Order No. 21, series of 1992 - Amending the revised rules and regulations implementing PD 1586 (Environmental Impact System).

DENR Administrative Order No. 29, series of 1992, as the general rules and

regulations of **RA 6969** to cover importation, manufacture, processing, handling, storage, transportation, sale, distribution, use and disposal of all unregulated chemical substances and mixtures in the Philippines including the entry, even in transit, as well as the keeping and storage and disposal of hazardous and nuclear waste into the country for whatever purpose.

DENR Administrative Order No. 14, series of 1993 - Revised Air Quality Criteria.

APPENDIX Philippines-2

Executive Order No. 279 re: Minimum terms and conditions that must be included in such agreements are stated in the order as follows:

- Requires a minimum expenditure of US $50 million and requires the approval of the President.
- All necessary management, technology and financial services are to be furnished by the contractor.
- The use of local goods and services to the maximum extent practicable must be given preference.
- A condition that the contractor shall not acquire title to the contract area.
- The stipulated share in revenue and the manner of payment thereof.
- A period of exploration not exceeding two years from the date of agreement, extendable for another two years.
- A period of use, including development, that shall not exceed 25 years, subject to renewal for another period not exceeding 25 years under the same terms and conditions.
- Obligatory replenishment of portions of the contract area after the exploration period that are not needed for use and development.
- Work program and minimum expenditure commitment for the exploration period.
- Provision on consultation and arbitration with respect to interpretation and implementation of the agreement.
- Employment and training of filipino personnel.
- Anti-pollution and industrial safety measures
- Restoration and/or protection of the environment.
- Transfer of technology to the government or local mining company.
- A stipulation that all data gathered by the contractor shall be furnished to the Mines and Geosciences Bureau and that all books of account and records shall be open to inspection.
- Commitment to community development.
- Such other terms and conditions not inconsistent with the Constitution and existing laws, as the Secretary may deem to be in the best interest of the government.

APPENDIX Philippines-3

Salient Features of the Proposed Mining Code

- Exemption from the 5% excise tax based on the gross value of mineral produced under the leasehold system. In lieu thereof, the contractor shall pay the government a basic share of 2% of the gross mining revenue plus an additional share of 10% of the net revenues;

- Additional deduction of labor training expenses and value-added tax expenses for export oriented projects.

- Relaxation of the terms of an agreement by the Government when unfavourable conditions jeopardize the continued viability of the project.

- Guaranteed remittance of the principal and interest on foreign loans, andearnings of foreign investment.

- Guaranteed repatriation of entire proceeds of the liquidation of a foreign investment.

- Non-expropriation of the property represented by the foreign investment or of the project, except for reasons of national interest or defense, and only upon payment of just compensation.

- Non-requisitioning of the property represented by the investment or of the enterprise, except in the event of war or national emergency and only for the duration thereof.

- Employment of foreigners for highly technical and specialized operations.

- The right to (i) carry-over of net operating loss as a deduction from taxable income; (ii) accelerated depreciation of assets; (iii) the non-impairment, alteration and modification of terms and conditions of a mining agreement during its life; and (iv) incentives under the Omnibus Investments Code of 1987.

APPENDIX Philippines-4

Other legislation of importance to mining and metal industries are as follows:

Mines Administrative Order No. MRD 16 (21 March 1977) - Rules and Regulations governing the issuance of permits for the taking and removal of ordinary earth, gravel, sand, stone, pebbles, boulders and other materials used for building and construction purposes from the beds of seas, lakes, rivers, streams, creeks and other public waters and from public and private lands.

Mines Administrative Order No. 19 of 18 July 1977 Guidelines for magnetite and iron sand mining operations along beaches of the seas and lakes and areas adjoining thereto and specifying the environmental terms and conditions required in:

- the issuance of a mines temporary permit;
- restoration work required during and after mining operation, and;
- posting of a surety bond in the amount of P20,000 for every mining pit of one hectare or less.

DENR Administrative Order (DENR AO) No. 85, series of 1990 - Revised rules and regulations implementing Presidential Decree No. 1251, as amended, imposing fees on operating mining companies, to be known as mine waste and tailings fees, to compensate for damages to private landowners and for other purposes.

DENR Administrative Order (DENR AO) No. 57, series of 1989, rules and regulations governing the mineral production sharing agreement under **EO 279**. Additional elements of national policy are likewise stated in said DENR AO, to wit:

- To promote equitable access to, economically efficient development of, and fair sharing of benefits and costs derived from the exploration, development and utilization of minerals;
- To enhance the contribution of mineral resources to economic recovery and sustain national development particularly in developing host rural communities as well as local science and technology resources.
- To promote the rational development and conservation of mineral resources under the full control and supervision of the State; and
- To enable the Government to recover full economic rent and/or its equitable share in the production and utilization of minerals.

DENR Circular Order No. 06 - Clarificatory guidelines on certain sections of DENR Administrative Order No. 57, series of 1989 and insertion of new provisions thereof (series of 1989) to improve clarity of the detailed production-sharing guidelines.

DENR Administrative Order No. 32, series of 20 November 1990 - Modifies DENR Administrative Order No. 57 which allows government to negotiate the major taxes (basic share in production or gross revenue plus a share in net revenue) rather than be restricted to a predetermined tax formulation.

DENR Administrative Order No. 343, series of 1992 - Rules and regulations to implement **RA No. 7076**, otherwise known as the People's Small Scale Mining Act of 1991.

Local Government Code. Local government units has been given the mandate to collect and impose real property tax. Its application to mining operations particularly on whether environmental protection structures like tailings ponds should be considered an improvement and therefore subject to tax is not clear.

APPENDIX Philippines-5

Other Environmental Impact Assessment Legislation:

Letter of Instruction No. 549 (6 June 1977) regarding the establishment of an administrative system for the evaluation of the environmental impacts of projects being undertaken.

Presidential Decree No. 1586 (11 June 1978) Establishing **An Environmental Impact Statement System** including other environmental management related measures and for other purposes.

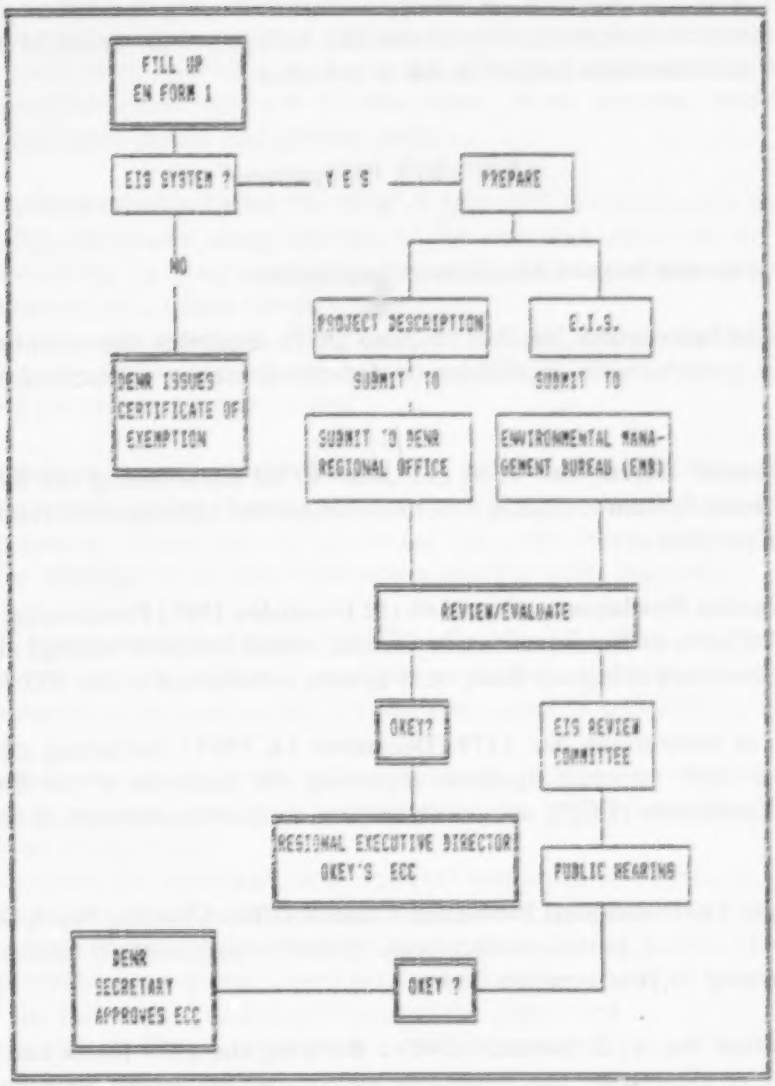
Presidential Proclamation No. 2146 (12 December 1981) Proclaiming certain areas and types of projects as Environmentally Critical (which includes mining) and within the scope of Environmental Impact Statement System established under PD 1586.

Letter of Instruction No. 1179 (December 14, 1981) instructing all appropriate ministries and their attached agencies regarding the issuance of an **Environmental Compliance Certificate** (ECC) as a precondition to commencement of any activity or project.

National Environmental Protection Council Office Circular No. 3, Series of 1984 (November) - Technical definitions and scope of the Environmentally Critical Project and Areas enumerated in Proclamation 2146.

Resolution No. 4 (23 January 1985) - Revising the 1979 Rules and Regulations of PD 1586 which established the Environmental Impact Statement System in relation to PD 1151, promulgating the Philippine Environmental Policy.

APPENDIX-6 PHILIPPINE EIA SYSTEM FLOW CHART



Thailand

APPENDIX Thailand-1

The **Constitution of 1974** was the first to contain provisions on national commitment to protect the environment fo the country. Chapter 5 of which is entitled "Directive Principles of State Policies", provide:

"**Section 77**. The State should conserve the balance of environment and natural beauty including forests, upstream water resources, and water."

"**Section 78**. The State should promote the exploration of natural resources in order that they may be economically exploited for the thai people; provided that it is not contrary to the principles of conservation.

"**Section 86**. The State should have a demographic policy appropriate for natural resources, economic and social conditions and technological progress for the purpose of economic and social development and for the security of the State.

"**Section 93**. The State should conserve and keep the environment clean and eliminate pollution which jeopardize the health and hygiene of people."

APPENDIX Thailand-2

Environmental Provisions under the Mineral Act:

Section 62: A holder of Prathnabat (a license issued for mining within the area specified therein) shall not mine within fifty meters of a highway or public waterway, unless he has obtained a license from the Local Mineral Official and he must comply with the conditions prescribed in such license.

Section 63: A holder of a Prathnabat shall not obstruct, destroy or undertake any work which may be detrimental to the use of highways or public waterways, unless he had obtained a license from the Local Mineral Resources Official and he must comply with the conditions prescribed in such license.

Section 67: A holder of a Prathnabat shall not discharge outside his area any slime or tailings resulting form his mining operation unless such water does not contain solid matter in excess of amount prescribed in a Ministerial Regulation (6 gm/l).

When necessary, the Minister is empowered to issue a license to omit the enforcement of the first paragraph and he may prescribe any condition as he deems fit.

Section 68: In discharging slime of tailings outside his mining area, the holder of a Prathnabat, even though he has complied with Section 67, must take measures to prevent the slime or tailings from causing public waterways to become shallow or from being detrimental to use os such waterways.

Section 69: In undertaking mining or ore dressing operation, the holder of a Prathnabat shall not perform any act likely to render or fail to perform any act that causes the failure of which is likely to render poisonous minerals or other poisonous matters harmful to persons, animals, vegetation or properties.

Section 70: The competent officials empowered to enter into a mining area for inspection of the mining operation at any time and the possessor of the mining area shall offer facilities a may be appropriate under such circumstances; and the competent officials are empowered to give orders in writing to the holder of Prathnabat to undertake any action to prevent any harm which may result from the mining or ore dressing operation.

Section 71: When the Local Mineral Resources Official considers that the mining or ore dressihg operation will cause harm to persons, animals, vegetation or properties, he is empowered to give an order in writing to the holder of Prathnabat to alter or modify the mining or ore dressing as he may consider necessary for the prevention of such harm and he is empowered to give an order in writing to suspend the mining or ore dressing operation

totally or partially as he may deemed fit.

Section 72: Any pit, winze or shaft which is no longer used in the mining operation shall be filed up or the land restored to its original condition by the holder of a Prathnabat regardless whether the Prathnabat has expired or not; unless the Prathnabat provides otherwise or unless the Local Mineral Resources Official, with an approval of the Director-General, has ordered otherwise in a written form.

In the event that the holder of a Prathnabat files to comply with the first paragraph hereof, the Local Mineral Resources Official is empowered to give an order in writing to the holder of a Prathnabat to fill up or restore the land to its original condition and the holder of a Prathnabat, must fulfil the requirements in such order within ninety days after receiving the said order.

Section 116 In undertaking an ore dressing operation the holder of an ore dressing license shall not perform any act likely to render, or fail to perform any act the failure of which is likely to render poisonous minerals or other poisonous matters harmful to persons, animals, vegetation, or properties.

Section 119 The Director-General is empowered to revoke an ore dressing license when it appears that there has been violation of the provisions hereof or of the conditions prescribed in the license, or upon the occurrence of causes affecting public safety or welfare.

The order revoking a license shall be delivered to the licensee and the license shall be deemed to expire on the date the order is received. The licensee whose license is revoked is entitled to appeal the order to the Minister by submitting such appeal to the Local Mineral Officer within fifteen days from receiving the order. The decision of the Minister shall be final.

The holder of a license which has been revoked shall not apply for a new license until two years have lapsed since revocation of the previous license.

Section 137 Whoever fails to comply with the order given by the competent official under Section 71 shall be liable to a fine not exceeding two thousand Bhat and the Minister has the power to revoke the Prathnabat.

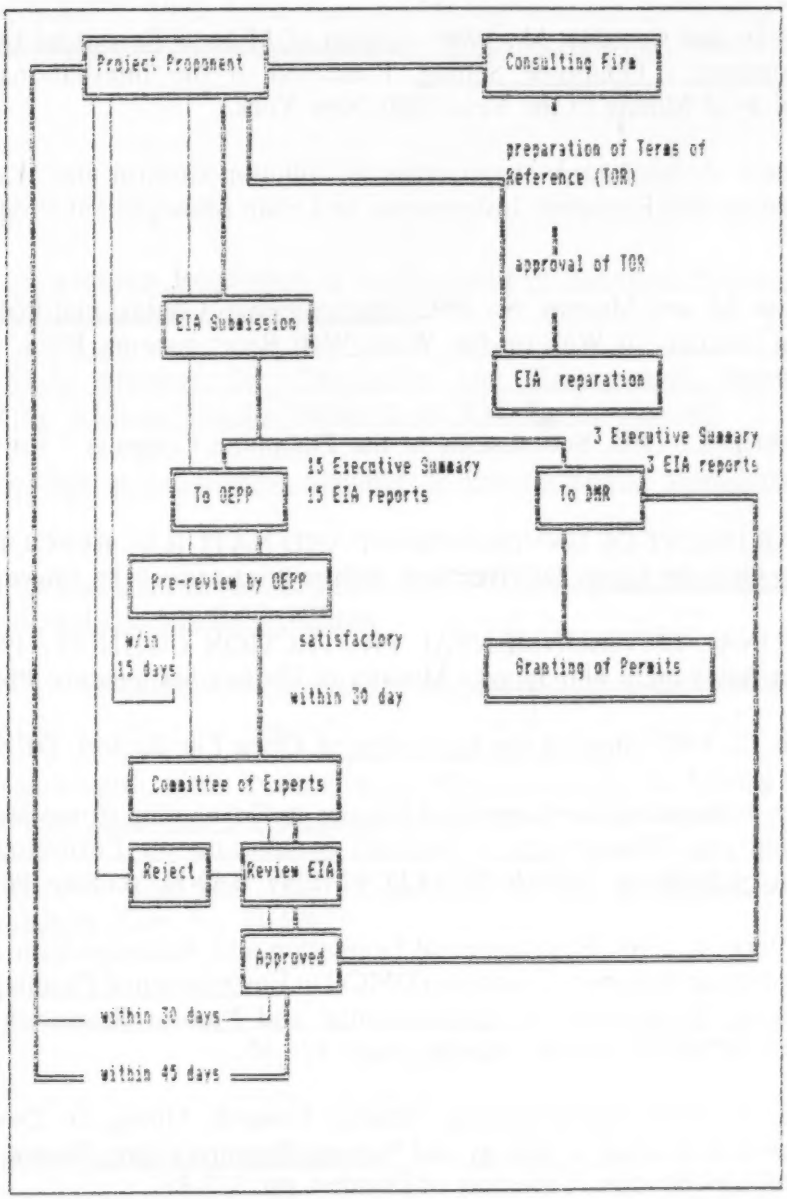
Section 139 Whoever fails to comply with the order of the competent official under Section 72 paragraph two, shall be liable to a fine not exceeding two thousand Bhat and shall be liable to compensate for the expense of restoring the land to its original condition.

Section 150 Whoever violates Section 116 shall be liable to a fine not exceeding two thousand Bhat.

Section 123 and 126 are concerned with metallurgical processing which are quite similar to Section 116 and 119.

APPENDIX Thailand-3

THAILAND'S EIA APPROVAL PROCESS



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